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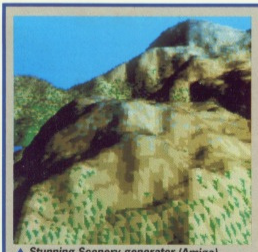

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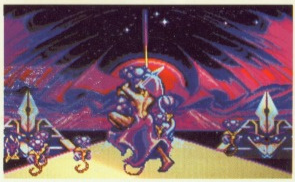
LOADING GUARANTEED!

The action starts on page 33

PURPLE SATURN DAY!



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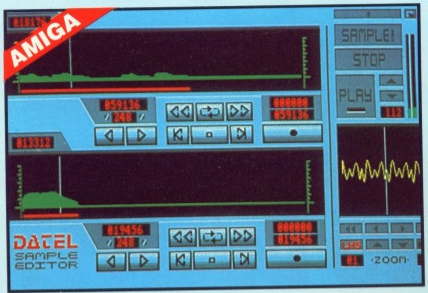

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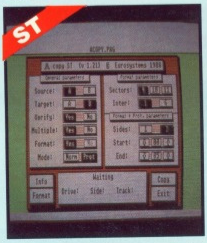

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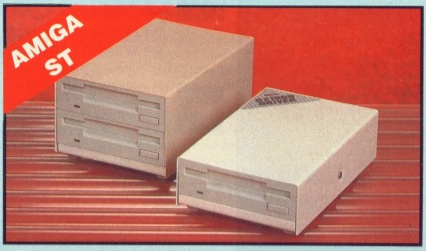

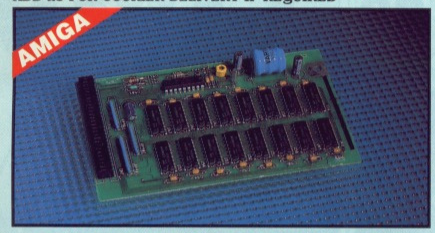

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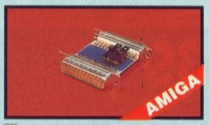

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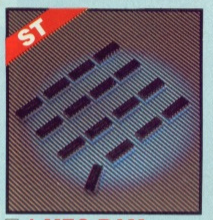

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CO-EDITORS
Ben Taylor
Simon Williams

DEPUTY EDITOR
Richard Monteiro

DISK CO-ORDINATOR
Jason Holborn

GAMES EDITOR
Mark Higham

ART EDITOR
Gordon Druce

DESIGN ASSISTANT
Kevin Hibbert

ADVERTISING MANAGERS
Margaret Clarke
Nora Lawton
(061-474 7333)

PUBLISHER
Greg Ingham

MANAGING DIRECTOR
Chris Anderson

SUBSCRIPTIONS
Avon Direct Mail Services
Units 12-14 Old Mill Road
Portishead
Bristol BS20 9EG
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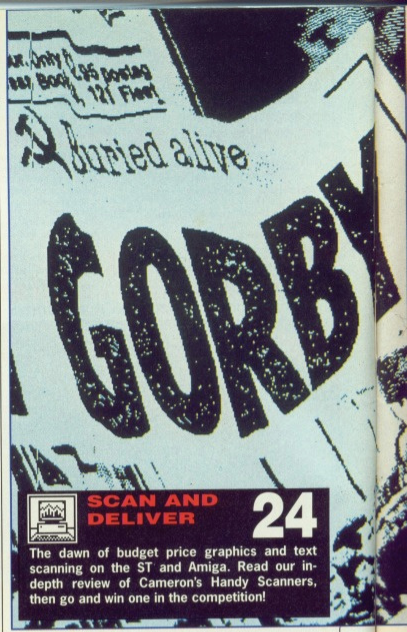

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The dawn of budget price graphics and text scanning on the ST and Amiga. Read our in-depth review of Cameron's Handy Scanners, then go and win one in the competition!

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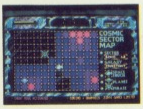

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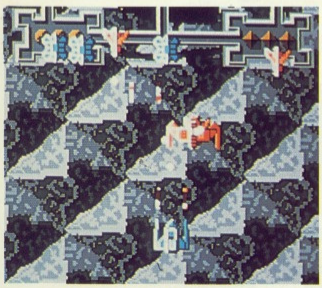

BAK TO THE FUTURE 12

Steve Bak, ace programmer of *Fright Night*, *StarRay* and *Goldrunner* offers his thoughts on STs, Amigas, software houses and the universe.

1989: 16-BIT YEAR

Each of the last three or four years has been heralded as 'The Year of 16 Bit Micros'. In truth, there are still 10 times as many 8 bit machines on the laps of fervent games players as 16 bitters, so why should anyone be stupid enough to make the same claim again?

Well the runes have been cast and they all point to the fact that we are close to reaching a point of no return in 16 bit sales. Not only are ST and Amiga games increasingly released before their 8 bit brethren, but there are plenty designed exclusively for 16 bit machines, as the superior graphics and sound are essential.

Look at this month's master games if you want further proof. *Purple Saturn Day* and *Baal* are just too good graphically and sonically to be converted down to 8 bits. Other versions may follow, but they will only be poor imitations of the originals. As software houses have seen their 16 bit sales explode, they are keen to give programmers full rein to produce new, fast, exciting games for the best machines.

It's not just games programs which are taking off on ST and Amiga. The number of graphics and music utilities, word processors, databases and typewriter simulators (?) which pester to be reviewed increases by the month. And best of all, the volume of UK-originated products is on the up and up. It seems our beloved machines are at last being taken seriously.

Now the 16-bit snowball has gathered sufficient momentum, there will be no stopping it. Don't stand in the way unless you want to end up with very cold feet.

for details.

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Starting this month you could save up to £17 on your mail order shopping through the pages of Format. At the back of this issue you'll find four discount vouchers good with any advertiser displaying the Format Voucher logo – ideal for the January sales! Turn to page 103

TECHNOPHILE

ST SPEECH SYNTHESIZER 44

Don't let Amiga users get one over on you – build our easy to use speech synth.

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How to make you screen disappear, turn green or come out in spots. A programmer's insight to graphics on ST and Amiga.

DESKTOP 87

Another truckload of tips and tricks for trendy ST owners.

WORKBENCH 91

Another hunk of hints and help for happy Amiga amigos.

COMPETITION

41 **WIN A HANDY SCANNER!**

Win one of two fabulous Cameron Handy Scanner systems in our easy to enter (hard to win) comp.

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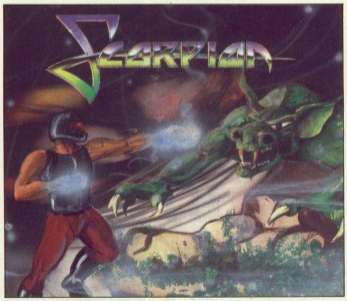

As a Scorpion warrior journey through magical lands where time has no control, battle your way through the five domains in your quest to reclaim the princess of Scorpia.

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Amiga Screenshots

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NEWS

SUPER ST SURPRISE

- **Super ST details**
- **Chip famine continues**
- **1988 Industry awards**
- **Charity games compilation**
- **Kickstart 1.3 problems**

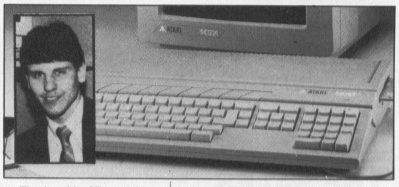
Atari's much rumoured Super ST – which has been making headlines more often than the Sunday Sport's WWII-Bomber-on-the-Moon stories – is closer to being reality after US-based Megabyte Computers' revelation that it is negotiating with Atari to supply its high-speed circuit boards.

Megabyte's board, which is currently on sale as an add-on for normal STs, comprises a 16MHz 68000 processor (the processor in your ST is rated at 8MHz) and claims an astounding 95% speed increase over standard machines. The circuitry consists of around 37 chips, but surprisingly the US retail price is only $249 (around £150), so it shouldn't push Atari's end product price up too much.

According to Megabyte's ebullient boss, Kevin Henderson, Atari should have decided whether it is interested in incorporating the circuitry within new 'Super' STs by the time you read this.

Early rumours indicated that the processor inside the so-called Super ST was to be the 32-bit 68020. However, Bob Katz (Atari UK's technical director) crushed this story when he mentioned to developers earlier in the month that to keep costs down the chip would in fact be a 68000.

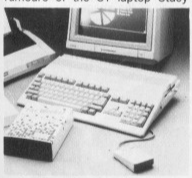
It remains to be seen whether the new machine also has the promised Amiga-bashing stereo sound, 4096 colours and hardware scrolling. Whatever the case, it can no longer be denied that Atari definitely has a new ST-compatible micro on the horizon.



■ *The humble ST – sticking with the 68000 but set for a turbocharge courtesy of Kevin Henderson's (inset) booster board.*

Now an Amiga laptop?

To prove how close the ST and Amiga really are, no sooner have rumours of the ST laptop Stacy emerged than an Amiga model leaks out.



■ *Cuddle an Amiga in '89 – destined for the nation's laps.*

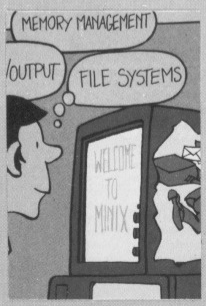
Details are vague, but it seems that a small company in the States is rehousing the Amiga boards in new cases with a 7" amber monitor and space for two disk drives. The provisional name is Journey Man, and the price? Um... $2,200 is the current estimate.

The pair who produced it raised the necessary investment capital by selling T-shirts and calendars. Release is set for the New York AmiExpo in March... phone Mike Morrison in the States on 010-1-401-949-5310 for more details.

Minix mimix Unix

It had to happen. After all Unix's recent press attention, publisher Prentice-Hall has announced a Unix-like shell for the ST. Called *Minix*, the operating system has all the outward appearances of being Unix: it is compatible with V7 Unix, it comes with many utilities that operate (and are named) identically to Unix versions. The Minix manual costs £10.70 while the program disks – all nine of them – cost £98.44.

■ *Department 35, Prentice-Hall, 66 Wood Lane End, Hemel Hempstead, Herts, HP2 4RG (0442 231555).*



CHIP FAMINE STRETCHES INTO '89

The Great Memory Chip Scare was the marathon story of '88, but reassuring announcements by Atari and Commodore have recently given the impression that all is sweet.

Not so. Investigations by Format reveal that ST and Amiga owners face real difficulties when trying to expand their machine's memory.

Plenty of suppliers are offering memory upgrade boards. However, if you are thinking of buying one, read the small print – it usually says 'unpopulated'. This means that all you get the bare board, and buying the 512K or more of memory chips to go on it is your lookout.

CCommodore themselves – who trumpeted a press release about how they had assured a supply of RAM chips – are not without problems. Their 8MB Amiga 2000 expansion board is being supplied with only 2MB of chips on it. And dealers who have asked to buy the other 6MB have been told to find independent sources.

The chips the ST and Amiga require are 256K DRAMs (Dynamic RAMs). Most suppliers won't quote a firm price. Brian Brooks of Magenta said, "We can get the DRAMs quite quickly, but prices fluctuate so fast we'll only give a price on request. At the moment, expect anywhere between £7 and £9." Maplin, the mail order giant whose catalogues are in WH Smiths, list the chips at £3.35, but the price has risen to £8.95 since printing. You need 16 chips for a 512K upgrade.

OPERATING DIFFICULTIES

Proud owners of new Amigas bought in the Christmas rush are finding a few problems with some software – because they've got the new version of the Kickstart ROMs, the Amiga's operating system.

Although all software which Commodore describes as 'legally written' runs on the new ROMs, some games won't. In particular, Electronic Arts' *Ferrari Formula One* falls foul of the new system.

Dave Pocock, of Commodore's technical support department, was puzzled. "Kickstart 1.3 is hardly changed at all from 1.2, so there really shouldn't be any problems," he said. "We've had it under heavy testing for a long time now. What is true is that it takes up slightly more of the Amiga's free RAM on booting, so any program which is critically memory-tight on an old A500 might have trouble, but we haven't found any yet."

NEW TOS

And on the subject of operating systems, the latest release date set for the new version of Atari's TOS is March 1989.

When the last revision of TOS was introduced in September '87 there were massive incompatibility problems because it ate up 14K of RAM more than the old version. Bob Katz, Atari's technical director, says that the forthcoming version will be more compact, so there shouldn't be any similar problems.

The new TOS will come on two ROMs, and although Katz says it is too early to set a price he assures owners that Atari will only look to cover their costs. Expect a price of £15-£20.

Unfortunately owners of old STs – pre-September '87 – won't be able to fit the ROM upgrade as the circuit board design was changed at the last revision.

THE SALES ARE ON

Prospective purchasers of STs and Amigas have never had it so good. To keep the 16-bit market bubbling in the post-Christmas lull, two major bundling deals have been announced by national wholesaler Silica Distribution, with a third promised for the near future.

SDL have decided to promote the 1040 as a games machine – the same twenty games as in the 520 'Super Pack' will be bundled with 1040s at £499 figure.

SDL's second deal covers the Amiga. For £399 you get an A500, ten games including Terrorpods, Barbarian, Wizball and Buggy Boy, and the highly acclaimed art package Photon Paint.

And Atari themselves have revealed that they plan to push the ST in the music sphere with another bundle. 1040s will soon be shipped with Steinberg's Pro-12 sequencing software, ideal for linking up via the MIDI port to a keyboard. This too will sell for £499.

■ *Silica Distribution, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX (01-309 1111)*

1988 INDUSTRY AWARDS

The 1988 microcomputer industry awards were announced amidst the popping of champagne corks (the winners) and howls of outrage (the losers) at the Savoy in December. The 16-bit plaudits went to:

■ Game of the Year: Virus (Firebird)
■ Best Sound: Xenon (Melbourne House)
■ Best Graphics: Starglider II (Rainbird)
■ Best Arcade Conversion: Pacmania (GrandSlam)
■ Adventure of the Year: Dungeon Master (Mirrorsoft)
■ Simulator of the Year: Falcon (Mirrorsoft)
■ Utility of the Year: Photon Paint (Microlllusions)
■ Budget title of the Year: Sidewinder (Mastertronic)
■ Programmer of the Year: The Bitmap Brothers

And just to keep those boys at our sibling magazine ACE in the office next door quiet for a bit, we've got to admit that they did pick up the gong for Magazine of the Year. Congratulations, chaps; now will you please stop telling us about it?

AUTISTIC TALENT

1989 will see the games software houses working together for charity in aid of autistic children. The project was launched at the annual computer industry awards bash just before Christmas, and it's already won the support of four major games houses.

The idea is that publishers will contribute 16-bit games to a compilation disk of five titles to sell for £19.95-ish. Activision, Electronic Arts, Virgin/Mastertronic and Firebird have all said they will submit games for consideration. Each game will be vetted by a panel including Activision boss Rod Cousens and ST Amiga Format publisher Greg Ingham – both hard-bitten gamesters who promise to ruthlessly weed out anything less than top-quality.

Launching the compilation, Ingham was confident that the games would be of a high standard. "This industry is extraordinarily generous in its support of charity events, and has a genuine desire to help. Pro rata, the games software industry has been much more generous to charity causes than their counterparts in the record industry," he said.

The last charity compilation, Soft Aid in 1987, raised £350,000 for famine relief. The launch date for the new venture has been provisionally set for Easter 1989.

■ *Ingham – "Extraordinarily generous"*

DIGITISING SERVICE

You've seen all those glossy digitised screens in magazines, but how on earth can you get equally impressive images in your own paint package? You could buy your own digitising kit, but with a camera you're looking at £400 or more.

Photofile is a new service aiming to solve this problem – it's a digitising-by-post service for those one-off jobs. You supply a photograph of the image you want, tell them what paint package you use, and they'll send the digitised file

■ *A sample black-and-white digitised screen, courtesy of Photofile.*

QUICKIES

■ **By the time you read this, European Amiga developers will know what's in store for 1989 from Commodore. A developer's conference was held from 16th-19th January in Frankfurt – we'll bring you a full report next month.**

■ **The perils of provocative titles were underlined in December as all imported copies of the morally dubious game *Sex Vixens from Space* were impounded by the vice squad. Rumour has it that they couldn't work how to run them, no action has yet been taken!**

■ **P.A.L. (Programmers Advice Line) is a new user group for ST programmers in general, and users of HiSoft products in particular. Contact 42 York Road, Rayleigh, Essex SS6 8SB. Newsletters, PD disks and tutorials are all part of the goodies promised.**

■ **Calling all fans of Electronic Arts role playing games – clue books are now available at £5 each to help you finally get to the bottom of *Bards Tale* I, II and III, *Deathlord*, *Wasteland*, *The Mars Saga* and *Sentinel Worlds*. Phone 0753 46465 for info.**

PUBLIC DOMAIN NEWS ISSUE 1

Librarians Note for January: If you already enjoy Amiga Public Domain and Shareware programs or have been thinking of trying them, the T.B.A.G. Library is for you. From the Tampa Bay Amiga User Group in Florida the T.B.A.G. disks include some of the most useful and enjoyable programs available for the Amiga. All of these disks autoboot and run on a single drive system. Helpful program documentation is usually included. Here are the highlights of the disks recently imported into the U.K. by George Thompson Services.

T.B.A.G 1 150 windows,Ball,Cosmo-Roids (Asteroids type name), Crystal Vision (allows your Amiga to apparently read your spectators mind!), Echo.arc (Improved "Echo" command). Flipper (like board game Othello but faster). IFF:Fbasic.arc, (these AmigaBasic programs introduce a new IFF form, ACBM, that allows the display, load and save of IFF images under AmigaBasic), Lens (magnifies an area wherever the pointer is positioned, Pies, Newfd.arc, (latest, fixed .fd files), Newtopaz.arc (install a font to replace the deault 80 column Topaz font), Puzzle (scrambled letter puzzle), Sprong, Welock, Yaboing.

T.B.A.G 2 3D-Breakout (true 3D version of the famous game "Breakout"), 3D Stars, Bedroom.Video (Aegis Animator demo later used in the Tech Tech demo disk) Browser (Allows you to list any file (binary or text) on the screen) CLE (allows editing within the current command line and recalling of previous command lines), Comm 1.31 (V.1.31of useful comms program), Cube, DirUtil 2 (allows you to work with files from Workbench), Fileprint (Designed to send your Doc files to your printer), Knight.Video, Moire (Moire patterns in black and white), Mote (this program is only good for one thing, DOWLOADING PROGRAMS! It uses Wxmodem protocol and cuts your downloading time in half. Thus saving money!), Player, Rubik, Snapshot Video (Anim demo of moving coloured squares that form and dismantle a coloured digitized picture, YachtC (1 to 4 player dice game).

T.B.A.G 3 Boing2, Cycle Pointer (Cycle the colours in your cursor), Dirutil 3 (A file/disk utility program), Disk-Cat (a disk catalouer program. Handles up to 1000 files. Very comprehensive sorting features plus a filter that can skip for example DOS files when cataloguing), Font-Viewer (lets you see all the fonts on your system disk), L.D/1.2 , Piano (small keyboard with Waveform and Octave options), Pop Colours, ReAssign (very sueful to those using a hard/disk combined Kickstart and Workbench disk. Will reassign the System disk), Screen-Photo (text file giving detailed information, hints and tips on taking photographs for your Amiga screen), Screen Saver (Blanks out screen after a preset period. Saves monitor), Slideshow (high quality slideshow that includes some of the best pics sent to T.B.A.G at the time).

T.B.A.G 4 3D-wee.demo, Alien Park.Pic, Assembly C files (includes Break,Echo,Prompt,CD, Mkdir and Stack), ChangeKickStart (allows you to change from Kickstart V1.2 to V1.1 WITHOUT SHUTTING OFF YOUR AMIGA! (A1000)), DIRUTIL 5 (latest version of this excellent file/disk utility program. Useful for those who don't like using the CLI), Dotil (lists in alphabetical order all files on any two directories. Shows file size, creation date and amount of free disk space. Also will copy, rename and delete files/directories and transfer files), Missile Command ('Missile Defence' style game), Resident, Setcli, World demo (rotating globe with option to change axis), Xspell (spelling checker that will proof read text files).

T.B.A.G 5 Ask (a program that gets Y/N input from the keyboard within a certain time limit and returns either O (for Y) or 5), Cube Rotate, Dux (File/disk utilitity program. Features global rename, type and htype), GfxMem (Graphically displays available memory), Ingo.Kalendar (a perpetual calender tool), L.D.1.3 (Works like the "DIR" command except Ld shows the directory in colour and in 4 columns), LittleBlackBook (small notepad that includes name, address, telephone number and note), LW2 (used in your startup-sequence it allows you to choose whether or not to load W/B), MakeAcv (these programs attempt to solve a problem we are all familiar with, the large number of head seeks needed to copy several files into the ram:disk. The solution is to archive the small files into one large file and do a sequential read to load them into ram:), New Arc, Show (Shows any IFF picture files) Slideshow (Allows you to display pictures and text in many different ways), Sound (a sound sample player).

T.B.A.G 6 Biorhythms (Biorythms are the theoretical life cycles which effect our lives. It is interesting to look months or years ahead and see the good and bad days in store for you, but it is more interesting to look into the past to see if your biorhythms really correlate with the events in your life. This is a biorythm calculator), Blitz-Fonts (Makes text output up to 6 times faster for programs that use the Topaz 80 font eg. Scribble!), Bouncer, Daleks (Game based on the famous TV series), Durutil IV 12 (very useful utility for frequent CLI users. Includes clock, free memory available, Arc/De-Arc, Lock/unlock commands), DropCloth (DropCloth replaces the standard blank W/B backdrop with a pattern), Expander (the object of this game is to expand your mind as far as possible) Flux, Jive (Translates text from standard English to street English), MonaLisa.pic (Repro of the famous painting), NewZap (a multi-purpose file sector editing utility. If you've ever had the need to alter just a few bytes within a file, examine its binary and ASCII representations, or search for key sequences of digits or characters, NewZap will make your hacking life a little easier), Purty (provides an easy way to change some common printer settings), Rainbow, Robotroff, Rocket, Show2.1 (will show any standard IFF picture file incs HAMS), Sili (a greatly enhanced CLI for AmigaDOS or 'Smart Input Line Interpreter', with its own 'Control Console' window), Sunmouse,Tilt, VPG (video pattern generator).

T.B.A.G 7 Areacode (simply type in any 3 digit areacode and the program will display the appropriate cities (USA)),Conman (VO.95 of replacement console handler that provides line editing and command line histories), Defdisk (make a specified disk/directory the default system disk), Display, DK, DropShadow 2 (gives W/B windows a three dimensional effect), DUV-3/DUV-5 (useful utilities for frequent CLI users. Save a lot of typing, just use the mouse instead), Flip (A hack that turns your screen upside down - flipped Out!) Icontype (Changes the type of an icon after editing with IconEd) Melt, Monroe Video (Aegis player showing Marilyn Monroe with moving eyes and lips), Mouseoff,Ping,Pointrz (shows the possibilities of animated cursors), Seat, Pics.

T.B.A.G 8 Comm 1.34 (terminal program that features ASCII send and capture modes, XMODEM send/receive with checksum and CRC modes and AUTOCHOP on receiving files), Conman (VO.98B), DiskX (A handy utility for just looking around to see what AmigaDOS actually DOES with the file when you write it to the disk. Having troubles with an adventure game? Take a quick tour with this program), Jeff's Icons (18), Llog (A very fast Disk cataloguer), LPem, LRead,More V1.1, PopCli II (provides a simple way of starting another CLI at any time), ROT (a program to generate and display 3D objects), Show-Print II (a full feature IFF picture file screen dump utility).

T.B.A.G 9 Blkoff (BLOCKOFF a game that involves knocking blocks off a coloured wall), CleanRamDisk, Cycles (game based on the film 'Tron'), DeleteRamDisk, Dum2 (V1.5. allows you to read up to 300 files in a directory), Expose,FastMem (Will toggle all your fast ram on or off), FileMap (allows you to examine the sector allocation on your disks), FuncKey (this 'hotkey' utility allows each function key to be programmed with up to five different keyboard equivalent strings), GuruMusic,Hah, MacGaG (gives a nice effect when opening and closing windows), NGI (a utility that will allow you to read, view and reformat ILBM (DPaint etc) pictures), Pointers(36) (a collection of 'off the peg' pointers. One for every day of the month), Quickdate (for setting the system date quickily and easily), Recov/RamDisk (a recoverble Ram Disk. Data in ram survives a visit from the Guru. Probably the most useful utility in the PD libraries), Rollback (brings back the information that has scrolled off the screen during a CLI session), Shortcut (a utility that makes using the CLI easier. Instead of typing long command sequences over and over again, you can now type them in only once and replace them with one key stroke. Shortcut adds menus to the CLI window, so all commands are accessible via mouse or command keys. Recommended.SysMon, Target, View (Utility for viewing text files from CLI), Wordcount (Calculate the number of words, lines etc in any text file).

T.B.A.G 10 AutoPic2 (Will call your viewing program to display all the pics in a directory), Cards (Game of Blackjack), Colourcube (Allows you to peruse all 4096 colours in the Amiga palette, 25 at a time), Journal (Records a sequence of mouse and keyboard events as they occur and stores them in a file), Jskull1.pic (Artwork from a portfolio disk by computer artist Joel Hagen. These pics are digitised from actual ceramic models made by the artist to represent artifacts which future space travellers might possibly find on some far flung planet, as proof that alien forms of life exist) Jskull5.pic, Jskull7.pic, Keylock (Simply freezes the keyboard and the mouse so that nothing can enter the system. The only method of entry is to enter the correct password), Krabat, Ptroff,QB (Quick-Base is a MialBase Management utility), Smush, Spooler (Printer spooler), Suck, Suffixer2, Sumkick, WBLace (Changes the resolution of the W/B screen from a 640x200 screen to a 640x400 screen and vice-versa).

T.B.A.G 11 Amic (Coms program with many features that include Macros, Redial/Hangup options), DO-OP (A startup-sequence controller), Free,Hotair Video (Well done video), Icon+ed (similar to the IconEd on the W/B disk but with tools that include Freehand, Line, Rectangle, Square etc), Jobs (Provides instant access to various Workbench and CLI commands by simply selecting command gadgets) Kickbench, Mach (Mouse Accelerator), Noid.pic, Phropets.demo,Target2.

T.B.A.G 12 Access! (V.24 of a "16 colour Terminal Program!) CLI-WIZARD (Useful and well presented disk utiltiy for those of us that make frequent use of the CLI), Dirmaster (A disk catalog program. Features include Menu and Mouse driven interface, Multiple display modes, Printer and file supprot, Quick record searches and more), Pios, Four (Game of Four in a Row), J-Clock, NoKlickStart (empty drives make a clicking noise. With one it's bad but with three or four it's..... NoKlickStart solves this!) Scrub (Allows you to spin a selected drive for head cleaning), SS, TTT (A Three-dimensional Tic Tac Toe game).

T.B.A.G 13 8ColourWB (Have you (A1000 owners only) ever wanted to move colours on the Workbench screen? This mod will let you have just that), Amibug, BMP/BMP2 (Ever wanted to run music in the background of your slideshows? BMP will play any FutureSound or IFF sound file), Cli-Wizard.1 (An interface to be used in conjunction with CLI and W/B. You can do everything you can do from the CLI but with the mouse instead of the keyboard. You can copy/edit files, list directories, edit files, display pictures, play music, load a terminal etc), Dirwin, Intro.Sound, Kahnankas,Snipit, StepRate (Changes the 'Step Rate' time ie. Speeds disk access).

T.B.A.G 14 Amoeba (A Space Invaders look-a-like with awesome features!) ARP ('AmigaDos' Replacement Project') DB-Wiz (A mailing list program, although it can be used for almost any type of Database), DrunkenMouse,EdSTSeq (Performs the command 'Ed SYS:S /Startup-Sequence from W/B) FFormat1.1 (Utility designed for those that cannot stand the slowness of the DOS format), IFF-Mirrors (Lovely utility that manipulates an IFF picture), KEEP (Utility for BBS and Network junkies who download messages in one large file and then read them off-line) LaceWb (Switches on/off Interlace Mode without re-booting the system), MAKEDIR-WIZ (Used from W/B it creates a subdirectory and also a custom icon) Nemesis (RomCrack! When you activate RomCrack all hell will happen (YOU-THINK!) But reset TWICE and see what happens! PERFECT!!!, Startle, VAC (W/B hack that turns your pointer into a hoover!) Viewer (Allows you to read thorugh and print standard ASCII files at an incredible speed) WB.

T.B.A.G 16 Cli-Wizard1.2 (An update to TBAG 12), Pies,DiskX (Sector-based Disk Editor that lets you view the disk in block-by-block format), Iconizer (Allows you to build a whole library of your favourite pointers and to pick any of them instantly), Introducer (Now you can create your own scrolling demos! Use your own pictures, your own sounds/text files), Intro.pic,Intro.Sound, Li 1Paint (Nice simple painting program), Planet (This program will map any IFF picture around a sphere (planet)), ScreenX (Provides a small/memory counter on the W/B screen, an easy way to save a screen to an IFF file and more. Recommended), TaskX (Real-Time Interactive Task Editor), XPOP-Cli (This PopCLI Will pop a cli to any screen that currently is infront).

The above disks are available from George Thompson Services, Dippen, Brodick, Arran, Scotland KA27 8RN. Tel: (077082) 234.
They cost £3.00 each or £19.99 for a pack of any eight including VAT & P&P.
There are no membership charges and orders are despatched the same day they are received.

back to you on disk.

At the moment, the service is only available for the Amiga, although an ST operation is under development. Prices are £1.50 for each colour image, £1.00 black and white, plus 60p post and packing. Any resolution can be used, including 4096 colour HAM mode with overscan (when the image fills the entire screen, like a TV). Photofile insist on supplying their own disks at £2.00 each, as a precaution against viruses.

If you've got a 3-D object you need digitising – a fantasy character model, for instance – Photofile can provide images suitable for viewing with 3-D glasses.

■ *Photofile, PO Box 196, Nottingham NG2 4GQ (0602 481997)*

68010 upgrade kits

Following the recent correspondence in Format's pages about upgrading an Amiga's 68000 microprocessor to a 68010, Copse Side Industries are offering a DIY kit to do just that.

For £27.50 on an A500, or £28.50 on an A2000, you get a 68010 chip and full technical manual for use. The extra £1 on the 500 is for a special screwdriver to undo the metal shielding inside the case – the A2000 doesn't need it. You will also need the special software patch supplied on Format cover disk number 4 – back issues are still available.

The 68010 simply slots into your Amiga where the 68000 currently is, whereupon you should see a speed increase of between 8 and 50% in your Amiga's operations, depending on what you are running.

■ *Copse Side Industries, 15 Copse Side, Binscombe, Godalming, Surrey GU7 3RU*

1988 AND ALL THAT!

The Format team cast a caustic eye over last year

Oscar Wilde once replied to a friend, when asked what he had written that morning, "Oh, I added a comma."

"What?" said the friend, "You spent a whole morning adding a comma?"

"Oh no," replied Wilde, "I also took it out again."

Perhaps Bob Gleadow, head of Atari UK has heard the story. In May they hiked the price of a 520ST by £100. Meanwhile Commodore cut the Amiga by £100, briefly putting it on parity with the ST at £399, much to the relief of its dealers. Quick as a flash, Atari dropped the ST down to its original level for the Christmas push.

Two weeks away

There's a lot still in the pipeline. When you hear a manufacturer saying, "It's two weeks away, we're just finishing the manual off," you know there'll be a six month delay. Into this category fall most of Atari's announcements for 1988, though to give them their due, some products have always been intended for '89.

Their CD ROM, which we reviewed/previewed in the August issue, is still not quite on the streets. The Stacey laptop may show in more than prototype form at the *Which Computer* Show in February and the super ST still lurks in the wings. Perhaps it'll take its first steps to stardom in '89.

Commodore avoided the chagrin of not supplying what it announced... it didn't announce anything until the autumn, when the Amiga 2500, Transputer card and AT Bridge Board were all lined up for '89.

The most important launch of the year was undoubtedly the arrival in June of *ST Amiga Format*, though we are, of course, far to modest to mention this.

THE FORMAT AWARDS

No prizes, no packdrill. Here are the combined opinions of the Format team on hardware and software in the following categories:

BEST GAME RELEASE
ST: Virus
Amiga: Interceptor

WORST GAME RELEASE
ST: Super Breakout
Amiga: Quasimodo

BEST NON-GAME
ST: Flair Paint
Amiga: Protext

WORST NON-GAME
ST: E-Type typewriter emulator
Amiga: Photon Paint scenery disks, including wood-grain background

LONGEST AWAITED
ST: Flair Paint
Amiga: Workbench 1.3

MOST HYPED PRODUCT
ST: Parsec graphics board
Amiga: The Amiga. (Did you see their Christmas ads?)

AMIGA BRIDGE BOARD

Format's story of 1988 products wouldn't be complete without the Amiga XT Bridge Board – a PC emulator for the A2000. It has a special place in our hearts, remaining one of the few bits of kit which is generally available to the person in the street, but eludes reviewers.

JULY: We requested a Bridge Board for review from Commodore's PR company. "No problem," they said. We rang with reminders twice in the next month. "Sure, it's in stock, no problem." Commodore then changed their PR company, so we began again.

AUGUST: Dean Barrett, Commodore's marketing manager, was in a meeting for several weeks. We sent a Fax for Dean's attention in 96 point type (that's BIG). Dean answered his phone: "No problem, it'll be with you by the end of the month."

SEPTEMBER: We spoke to Lesley Rehab, Commodore's marketing assistant. "No problem. Except the form authorising the loan has to be signed by Dean Barrett and Steve Franklin (the managing director)."

Met Dean Barrett at the PC Show. Dean assured us there was no problem.

OCTOBER: We rang Commodore. "No problem. The form's been signed, we're expecting new stock in any day now."

NOVEMBER: Rang Commodore. Bridge Board not in stock.

DECEMBER: Rang Commodore. Bridge Board not in stock.

Trying to get hold of a review copy of the newer AT Bridge Board just doesn't bear thinking about.

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GRAPHICS

BAK TO THE FUTURE

STEVE BAK: created nine games in 1988, has been ripped off by countless software houses, responsible for the Cutherbert series, might drop programming and buy an ice cream van. Read about the man, what he has to say about programming and his experiences in the computer industry.

Why does a man capable of earning £2000 a week quit his job for one which might make a tenth of that at best? Why does the author of an awful game often make more money than the creator of a great game? Why do programmers often think they're something special? Why am I asking all these silly questions? Read on, brave warrior, all (or at least some) will be revealed!

Before I continue, let me state that one – and only one – of the above applies to me. It's for you to decide which.

During the Autumn of 1987 I met a young programmer who had written a game and published it himself. The name of the company I can only just remember, the game itself I remember well. It was a good game with plenty of neat ideas and a fair amount of technical merit. The programmer thought it would make him a reputation and some money into the bargain. The game was a failure. A few weeks ago I saw the same game, hardly recognisable without a programmer's insight, being sold by a fairly large company and doing very well thank you. The game is a success and the programmer has a good future ahead of him. This is what programming is all about: create the games, let someone else take care of the marketing! So ends the first lesson. To anyone out there who hopes to be a successful programmer – forget the business side of things; that's a job for businessmen.

Bak to business

Lets get on with it. If you're going to write a game, the first thing you must have is commitment. Many people have approached me with part of a game asking what to do next. The answer is always the same; you should have decided that when you first started! That's not to say that alterations and improvements can't be made on the way, or even a fair amount of 'making it up as you go along.' You must have a plan containing an overall idea of the whole game and what's going to be in it right from the start. If you don't you might as well give up before you begin. Of course, some areas of the plan can be left blank and filled in later. But you must have the gumption to fill the blanks in later.

The first step over, you can start making real progress. Split the plan into small, independent parts and work on one part at a time. Each part can be split into as many smaller parts as you like, the more the better! Concentrate on small routines, making each one work properly before moving on to the next. A couple of tips might be handy here. Comment your source code. It is very tempting not to, after all you understand it perfectly and no-one else will ever read it. Bear in mind though, that you may need to return to your source years

■ *Microdeal's latest compilation pack, Hit Disks Volume 1, contains four games. Three of them are by Steve Bak.*

THE WISDOM OF BAK

Why are 16-bit games so expensive? In case you don't know, it's because of low quantities, high development costs and high production costs. But if you read the mags you already know that. Right? Wrong! The first excuse carries a little weight, but there's only real reason: a £20 game wouldn't sell many more if it was offered at half the price! Note the so-called £9.95 budget titles have all but gone already. A full price game makes more than twice the profit per unit for everyone in the chain – the programmer, publisher, distributor and dealer. So the real reason is greed, right? Wrong again! Ask anyone. That's not greed, that's business!

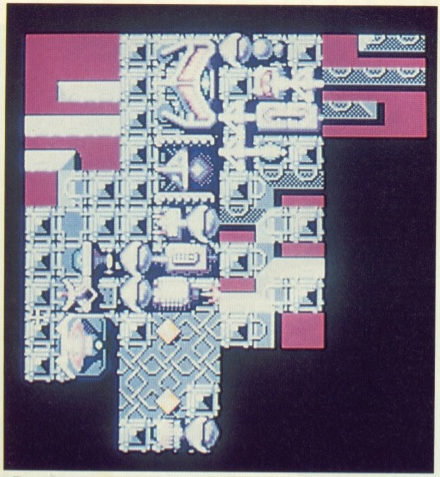
WHO IS STEVE BAK ANYWAY?

Just for the record, I am a 36 year old ex-miner, ex-arcade game fanatic living in the midlands. I bought an Acorn Atom (the predecessor to the BBC) way back in 1982 as I couldn't get hold of a ZX81 or Vic 20. Unfortunately there were no decent games for it so I had to write my own. First was *Robot Nim*, written in BASIC and published by A'n'F Software. BASIC couldn't cope with what I wanted so I turned to machine code. My first attempt was a kind of *Missile Command*, again published by A'n'F. After a couple more games on the Atom I upgraded (?) to the Dragon. Remember the *Cuthbert* series? After that I went through a rapid succession of micros – Tandy Color Computer, C64, C16, Enterprise, Sinclair QL – before settling down with the Atari ST and Amiga. Each of these computers had their advantages and disadvantages and each earned me a living, some better than others.

For the time being I shall stick with the two current 16-bit beauties. The 68000 is a programmer's dream compared to 6502, 6809 and Z80. Both the Amiga and ST are here to stay; within a couple of years the software base is going to be enormous. I can see these two computers lasting much longer than the 8-bits. STs and Amigas are cheap enough to buy for games use and powerful enough to do anything that you could want a home computer to do. Have you ever actually tried word processing on a C64 or doing financial planning on a Spectrum?

In the early days I preferred to work (like most programmers) at night. Nowadays, with my own office, I do things differently. I think most people would agree that my output is fairly prolific. In 1987 I completed seven games, in 1988 I completed nine. I've also earned a great deal of money – but at a price. I now work around 80 hours a week, drinking coffee and Coke constantly. I smoke around 50 cigarettes a day and get drunk every night – not an ideal lifestyle for a diabetic on insulin! I have had a good time as a programmer, but now is the time to quit. *Fright Night* will be my last game, at least, under these conditions.

What does the future hold? Well... I could buy an ice-cream van. Selling ice-cream in the summer sounds like a nice job. Perhaps I might open a fish and chip shop in Paris. There is a third possibility which, at the moment, sounds the most plausible: I may well start a 16-bit software development house.



■The entire graphics for one world in Return to Genesis. This meagre 16k of data gets shuffled and expanded to over 288k.

later after having written megabytes of similar stuff! Even more important are the small bugs that find their way into the game which don't really matter at the time. Stamp on them! Never carry on and write more code when there's something happening which is not meant to, no matter how unimportant it seems. Chances are that later on minor bugs become major problems – and once you've written reams of code they'll be much harder to find. Imagine looking for a typing error in over 300K of text!

Progress should be reasonably smooth if you force yourself to work to rule; complete one part then move on to the next. This is where commitment comes in. A game can take a long time to write. Maybe a year, maybe more. You are likely to get sick of your program well before it approaches completion. Don't be dismayed, stick to the plan and keep making progress, you'll get there.

Bak to front

Selling a game to a software house is the worst part of a programmer's life. In the past I, and probably most other programmers, have been cheated by more than half the existing software houses. Sometimes it's a matter of skimpy payments, sometimes late payments. And sometimes you don't get paid at all! What can you do about it? Nothing! If a company is going to cheat you, they'll cheat you. What about the contract? That surely offers you some protection doesn't it? Well, it might... if you're willing to spend £10,000 in legal fees in the hope of recovering a few thousand! In practice I've found that 'the standard contract' is never of any benefit to the programmer. Nowadays I'm very careful with whom I work. My terms are usually on a gentleman's agreement and without a contract. If you're new to the game there's only one piece of advice I can give you: insist on an advance on royalties. Make sure you get the cash before going too far with the game. That way you know you'll get something. If the company says no, go elsewhere.

Bakup

People ask me time and again to recommend development tools. Here are my favourites;

Assembler-wise I go for HiSoft's *Devpac 2*. The main reason is its speed; far faster than any other package on the ST or Amiga. Nothing else comes close. Devpac happens to be a very complete assembler and comes with a heap of other useful goodies including debugger, libraries, sample code, etc etc. It also has a very nice manual which I'll read one day! For a Text Editor you cannot do better than Microdeal's *Cbreeze* (Microdeal). It does everything that other text editors do and a whole lot more that others don't. Only once have I seen anything better – *Brief* on the IBM PC (US $300).

As for a debugger... I'm a bit lost there, I never use them. MonST looks good (it's in the Devpac package!) and *Metascope* for the Amiga takes some beating.

For sound sampling, *ST Replay* and *AMAS* (both available from Microdeal) are the best buys. *Amiga FutureSound* comes close to AMAS, but costs nearly twice the price. *SAM* is ideal for video digitising, but is hard to get hold of and expensive. Rombo's *Vidi ST* is excellent value. Watch out for *Amiga Grabber* from AVS.

For reading material, try *Anatomy of the Atari ST* or *Atari ST Internals* (it's the same book) from 1st Publishing. The Amiga's a different case; it depends what you want to do. If you're happy ditching the operating system then Commodore's *Amiga Hardware Reference Manual* is all you need – it's the bible. If you're not happy losing the OS, you pays your money and takes your choice. Whatever you decide, you're guaranteed to get no change from £100. Whichever system you have, the *Sunday Sport* is always a good buy for its brilliant investigative journalism.

BAK TRACK RECORD

My list of ST programs to date is *Lands of Havoc* (sorry!), *Disk Help* (very sorry!), *Electronic Pool*, *Trivia Challenge*, *Karate Kid II*, *Goldrunner*, *Jupiter Probe*, *Battleships*, *Return to Genesis*, *Leatherneck*, *StarRay* and *Spitting Image*. On the Amiga I have completed Karate Kid II, Goldrunner, Jupiter Probe, Battleships, Return to Genesis, *The Sentinel*, Leatherneck and Spitting Image.

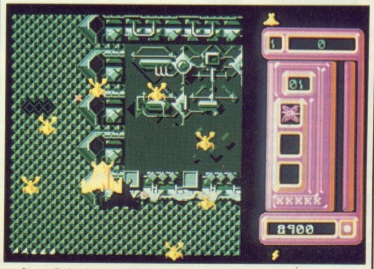
Currently I'm working on my last one game, *Fright Night*. This one I am doing only on the Amiga. It started off on the ST in the Summer of 87! Microdeal decided they wanted the game for the Amiga first, and as good as possible. So I am using 32-colour backgrounds with large sprites, 100 by 64 pixels, animating at 25 Hz. I don't fancy converting this to the ST – it would be a virtual re-write – so I shall pass it on to someone who will enjoy the challenge (hopefully, Tim Purves in the US).

BAK CHAT

The most big-headed thing I ever said: "I am the best *Mr Do* player in the world." No apologies, though, I am! And the most modest thing I ever said: "I'm not a great *Gryzor* player." Once, just once, I completed the coin-op without losing a single life!

BAK HANDED

For me, one of the hardest parts of writing a game is thinking up a text string to use as a cheat code. Here are some of my recent ones: CUTHBERTNECK, AMADEUS (as in Wolfgang M), AL YANKOVIC (??), BOO (I must have really been struggling for that on) and HELLO TIMBO (the guy who hacks out all these cheat strings). I'm not going to tell you which games require which cheat strings; that's for you to discover. All I shall tell you is that you need to type these strings at any point during the game. After that the function keys come alive.



■ *Steve Bak pioneered fast vertical scrolling shoot-em-ups on the ST. What Goldrunner loses in gameplay, it gains in unbelievably fast and smooth scrolling.*

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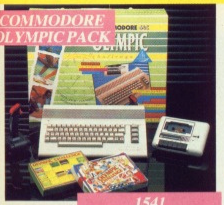

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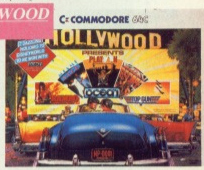

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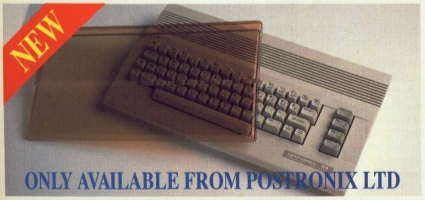

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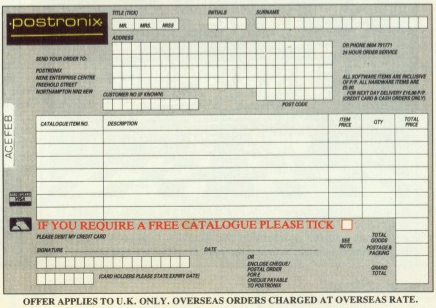

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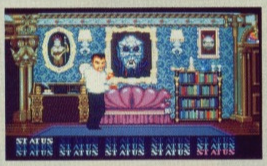
■ *Just look at those superb graphics. (created by Pete Lyon). And the size of that sprite (lovingly animated by Steve Bak)! It's Fright Night – the game of the smash film – on the Amiga. By all accounts this is Steve's last project for Microdeal; after that you may see him down your street flogging ice creams.*

The ST version won't be programmed by Steve, but possibly by Timothy Purves in the States.

Price of the game, if you're interested, will be £19.95. Details on 0726 68020.



Bak stroke

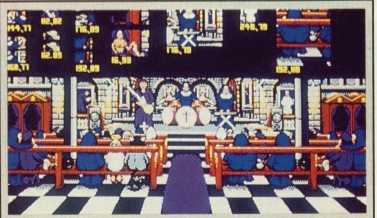
Degas Elite is probably the best graphics utility for the ST. It does have one big drawback for games programmers and artists: it lacks X,Y co-ordinates making it almost useless for anything but drawing pictures. Normally I use Activision's *Paintworks*, but having recently seen a very brief demo of AMS's *Flair Paint* I'm tempted. It could be what ST owners have been waiting for – it's worth checking out.

Amiga users are spoilt for choice. Most will get *Dpaint* free with their computer which is vastly better than anything on the ST. *Deluxe Paint II* is terrific and there are a host of even better, and more expensive, packages out there.

Hardware-wise, the ideal program development setup for me is a Mega ST with mono monitor connected – via an RS232 which squirts data at 19200 baud – to a 520 ST or A500. I did use the parallel port at one time when downloading to the C64; it's much faster, but I damaged two 1040STs and two C64s – much too expensive a risk to take with Mega STs and Amigas! For programming and text entry, the ST's mono mode is brilliant and very easy on the eyes. The whole setup is more reliable and faster than anything Amiga-based. I have a running disagreement with Jez San (he of *Starglider II* fame) over this point. He uses A2000's for downloading data to either 520s or A500s. No matter what the pros and cons are from a programmer's point, he can't deny that his set-up costs two or three times mine.

BAK PREDICTS

Sometime this year at least one publisher will launch a range of 16-bit games priced at £2.99. Laugh if you like, but watch the news.



■ *Spitting Images doesn't look like that! Oh yes it does. At least, to programmer Steve Bak. The entire backdrop, the various animated objects and the positions of the graphics images are all portrayed in this shot which forms the backdrop to the Pope scene.*

BAK BITES BACK

The Steve Bak awards (in no particular order).

THE GOOD

- **The guys who designed the Amiga hardware.**
- **Geoff Crammond for The Sentinel.**
- **Andy Pennel for Devpac.**
- **Jack Tramiel – not just for the Atari ST, but for being a Polish Jew who survived Auschwitz.**
- **Clive Sinclair for starting it all.**
- **Whoever wrote *Boulderdash*.**
- **Williams for *Defender*.**
- **Konami for *Gryzor*.**
- **Jez San for sheer knowledge.**
- **John Symes for never cheating programmers.**

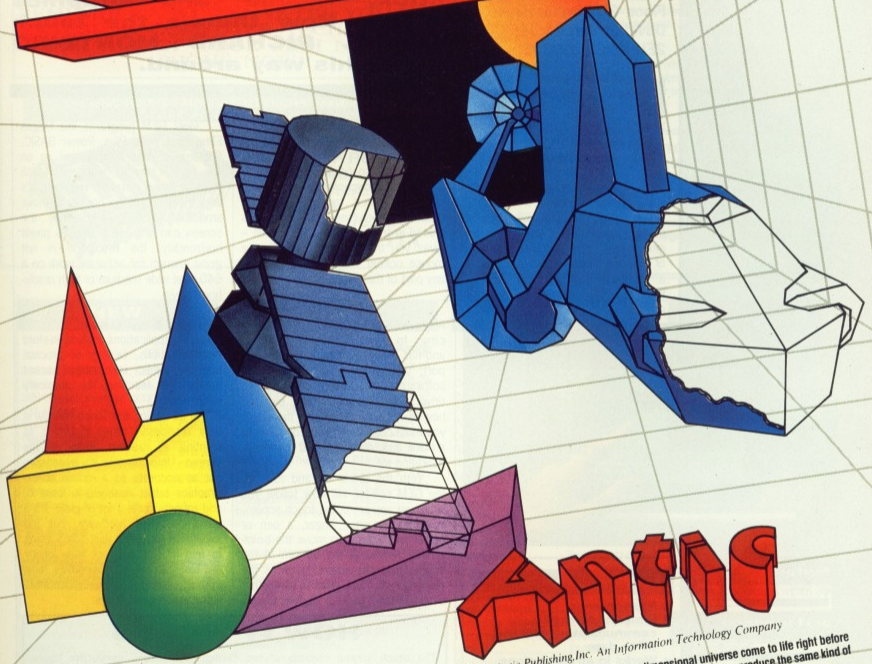
THE BAD

- **The guys who designed the Amiga software.**
- **Whoever is making money from Amiga *Streetfighter*.**
- **Commodore UK's technical and marketing support.**

THE UGLY

- **Ex-Power House boss Ashley "the cheque's in the post' Hildebrandt.**

CYBER SERIES



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REVIEW

TOUCH WINDOW

£458.85 (optional £15 stylus) ■ All STs, Amiga version under development ■ Eagle Computers, 2nd Floor, Glamorgan House, David Street, Cardiff, CF1 2EH (0222 390286)

Already there's a choice of device for communicating with the computer: keyboard, joystick, mouse and graphics tablet. Now there's the touch screen. RICHARD MONTEIRO pokes his way around.

Doubtless you've visited stores, banks or airports with computer monitors displaying timetables or product information. Nothing special about that. But some of these displays have messages asking you to touch the screens in specific spots. Doing the dirty usually results in the display advancing or retreating a page of information. What you're doing – in effect – is using your finger, nose or other unspeakable part of your anatomy to direct a pointer to a particular place on the screen. When the program detects that the pointer is in a certain area, it jumps to a sub-routine which might display all flights to Australia that day, inform you how to apply for a mortgage or tell you why you should buy NuclearWhite soap powder.

Eagle's Touch Window – which can be likened to a see-through graphics tablet (see issue 6) that is placed in front of your ST's screen – gives you the option of moving the mouse pointer simply by pointing to any part of the display.

For real

Along with the touch screen, which clings to your ST with velcro strips and has a plug running into the serial port, you get a power supply and software. The software contains two drivers: for machines with old and new ROMs. Before running the driver you must copy the correct driver onto a blank disk, rename it and run a configuration file.

With the driver up and running, the GEM pointer will now follow you wherever you press the touch screen. You can use your finger, a pen or some other stylus to move the pointer. An overlay at the bottom of the screen tells you where to press the touch screen if you want to simulate a single mouse click, a double mouse click or a click and drag.

Most GEM programs like Degas Elite, First Word Plus, Power BASIC, C-Breeze, Sprite factory and so on will work correctly with the Touch Window driver installed. However, it's very tricky to get the pointer to move smoothly enough, and since the screen can only work to 256 pixels horizontally, the resolution is not good enough for accurate work on a 640-pixel wide medium or high resolution screen.

Any use?

Possible applications include in-store demonstrations, factory or process control, public information access points and teaching the physically handicapped.

In its favour, the Touch Window is very responsive when it comes to pointing at random areas on the screen. Unfortunately it's expensive, not as accurate as a mouse or the graphics tablet reviewed in issue 6, and reflects quite a lot of glare. It's a good piece of hardware, but too expensive for home use. Who's going to use it? Certainly not little Johnny for blasting aliens. Businesses, academic institutes, county councils (information points): yes.

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

manuals Not seen

format value 0 1 2 3 4 5

for

- Responsive
- Simplest form of communicating with the ST to date
- Works in all resolutions

against

- Expensive – specialist interest only
- Resolution not good enough for accurate drawing

HOW IT WORKS

The touch screen consists of two facing, transparent, conductive layers (known as mylar sheets) which send the ST the co-ordinates of the point you indicated. The two layers contact one another only at the touched point, when with five volts applied across one of the layers the circuit is completed. The voltage at the touched point is measured and is taken as one co-ordinate of the touched point. This analogue level is converted to digital by an analogue to digital converter (ADC). The roles of the driven and and non-driven resistive layers are then reversed to determine the other co-ordinate. Simple, really.

Resolution of the touch screen is determined by the ADC. Eagle use an 8-bit affair which can resolve 256 co-ordinates in both horizontal and vertical directions. Both axes are measured 75 times per second, and data is sent to the ST via the RS232 port at 4800 baud.

The window automatically averages the area of contact to give the co-ordinates at the centre of the contact area. This allows pixel resolution to be achieved even when touching with a large object such as a finger.

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FUTURES

NET WORKING

In an ideal world every computer, printer and storage device in an office would be linked together (networked). Any device could transmit or receive information to and from any other device. RICHARD MONTEIRO discusses the current state of play and ponders the future of networks.

Whenever there's a body of computer users in a room, building, city or country who share information, storage facilities and expensive hardware, you're guaranteed to find some form of network in operation. A network is simply a fancy name for a communication link between two or more devices. These devices can be computers, printers, hard disks, tape streamers – indeed, anything that can receive and transmit data.

Networks are generally regarded as stuffy things for doing stuffy jobs – you know, serious things. Like sending the end-of-day sales report to various offices in the building, dumping a file to a printer that's right down the other end of the building, transferring orders to various factories around the country, searching for information on a data storage device that may be in another country or even on a satellite orbiting Earth.

But there is a lighter side to networking: multi-user games. Imagine a maze game in which your opponents – represented on screen as graphic blobs – are controlled by intelligent human beings (*What? Playing a maze game – Ed*) sitting hundreds of miles away behind a different make of computer.

Take a trip through the bewildering, but ultimately exciting, world of networking. Read on!

Spreading the word

The most common network is a *Local Area Network* (LAN), and is designed to serve a local establishment such as a factory, school or office. We at Future Publishing have several networks in operation; the largest being the one connecting together the layout artist's computers – more on this elsewhere.

LANs have different layouts (topologies), methods of data transmission and types of cable connecting computers and peripherals together. Twisted-pair, coaxial and fibre-optic cables are the three usual data carriers.

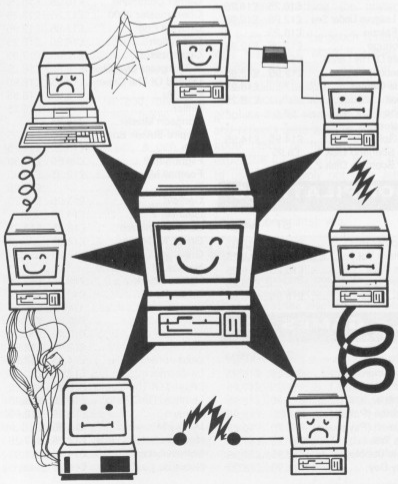
Twisted-pair wires, which are used in telephone networks and local exchanges, consist of a single wire with an earth return. The cable pairs are twisted to reduce 'crosstalk' with other wires. Co-axial cable has an outer earthed 'braid' which functions as a shield to reduce electrical interference and crosstalk. Optical fibre cable carries light pulses – and not electric current – which means it is unaffected by electromagnetic fields.

Knock twice

Network topology is the grandiose term for various types of network layout. There are three main types: ring, star and bus.

A ring network is formed by a continuous ring (makes sense) of nodes – devices – each linked to the next in line. Each device – which can be a workstation, terminal or printer – has a unique identification address. Messages are passed from one node to the next until the messages reach the required destination. Tokens – labelled packets which can have data read from or written to them – constantly whizz round the ring, which is why this setup is often called a token-passing ring. As tokens could be carrying data from any micro to any other, it is essential that devices in a ring constantly check these passing data carriers.

To ensure that signals sent from the transmitting machine have been correctly received by the specified machine, the transmitting micro checks the token after it has completed its circuit. The disadvantage of



GLOBAL COMMUNICATION

Whereas a local area network serves the requirements of an organisation for interdepartmental communication, a wide area network serves a wide geographic area and may encompass a country or even the entire world. WANs usually employ packet switching techniques. Packet switching is a method of collecting data in a block and sending it to a local packet exchange, from where the block is transmitted to its destination exchange.

NETWORKS FOR THE ST

At the moment you can choose from three: Atari Network from Ninetiles and PunchNet and PunchNet Plus from Software Punch.

The unimaginatively titled Atari Network follows the ring topology and can have 125 nodes. There's little restriction as to what can be included in the network. The system lets you access and alter data on other machines – assuming the other machines give you authority to mess about with their files. Devices can be hooked together at a cost of £150 per item. There's also a site licence of £100 for the software.

One thing to be wary of; the file server can't be Atari ST. A PC or an Amiga will do. All the gory details from Ninetiles, 25 Greenside, Waterbeach, Cambridge, CB5 9HW (0223 862125).

Two networking systems are available from Software Punch, with a third nearing completion. PunchNet is the more basic and is simply a printer sharing system. Data is transferred via the RS232 at 9600 bits per second. Cost per user is £160. PunchNet Plus hurls data around the bus network at 1Mbit per second. It can notionally accept 32,000 users. Price per user is £400. Punch's forthcoming network will work using Ethernet conventions. It will operate at 10Mbits per second and will cost a staggering £650 per node. Software Punch are at 38 Ullet Road, Sefton Park, Liverpool, L17 3BP (051-734 5827).

Silica (01-300 3399) are set to distribute a network system from Dutch company Cosmo sometime in March 1989. ANET, as it is provisionally being called, will surface as a fast MIDI to MIDI port optical ring network. According to Peter Brailsford, Silica's education sales manager, the system doesn't appear to have any limit to the number of users, should cope with most devices and will let you alter information held on another machine. Price hasn't been finalised, but it's likely to be near £230

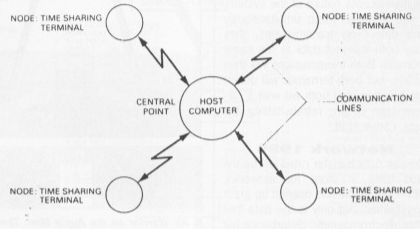
ring networks is that if there's a break in the ring the whole network goes down. Most networks in the UK are ring-based, due to the development of the Cambridge Ring at Cambridge University in the late 70's. Of course, any network worth its tokens will have one or more backup circuits.

Star performer

A star network has a central controller or file server –usually a computer controlling a storage device – to which all nodes are connected. Data is transmitted to specific nodes when requests for information come in. This type of network is used in time sharing systems where the central controller is a host computer to which all terminals are connected via modems, multiplexers and telephone lines. If the man in the middle breaks down then again the whole network ceases to function.

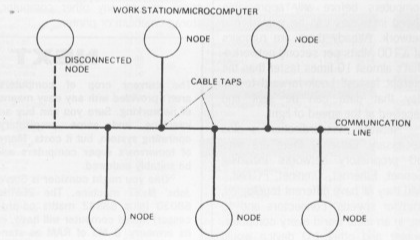
A bus network is a communication line or channel to which various workstations and other paraphernalia are attached. Any device can be added or removed without upsetting the system. Each device has a specific address and messages are sent along the line until the communication reaches the specified device. The advantage of bus networks is that if one or more devices fail, the network continues to operate.

Rank Xerox's Ethernet is a typical bus network; it uses a system known as CSMA/CD – Carrier Sense Multiple Access with Collision Detect. No! You can't use it to write shoot-em-ups. The system listens to the carrier wave to



Star network.

■ ***A Star network centres around one powerful main computer.***



Bus network.

■ ***A Bus network doesn't need a central controller.***

SPEAK TO ME

Consider the speed at which you can communicate over phone lines using a modem – 75 to 2400 bits per second. At the highest speed that's 300 characters a second (just over a quarter of a K per second). There is no way you could run a network successfully using such low speeds. Imagine you've got 10 or more users all wanting to update a sales ledger; the file has to be loaded into the user's terminal, altered and then sent back. Say the file is 500K; it would mean waiting just under half an hour for the file to arrive! Thankfully the average network shifts data at the rate of four million bits per second (488K per second). Advances in technology are pushing speed limits up, and it is expected that transfer rates of 100 million bits per second will soon be reached.

PLAYING ALL OVER THE WORLD

Game players in the states have, for some time, been treated to the ultimate in interactive, real-time, multi-user games – *Air Warrior*. The game was created by the Kesmai Corporation of Virginia for General Electric's online service GEnie. Subscribers to GEnie can log onto the system from anywhere in the States and fight each other over the skies of three fictitious countries.

Players can club together to form squadrons, team together to crew bombers or fly on their own. It is possible to communicate with members in 'briefing rooms' or exchange 'radio' messages once airborne. The system runs using surplus processing power, and can cope with 100 players.

Conventional multi-user games like MUD and shades can only portray game-worlds using descriptive text. *Air Warrior* gives you full animated 3D graphics and sound that you'd expect from a normal game. MUD and Shades can be played using standard comms software. Your computer just sends your edits to the host – the mini or mainframe looks after the game at the other end of the line – and displays any messages sent from the host. As far as your computer is concerned the text flying back and forth could be anything.

***Air Warrior* takes a different approach. It is a program that employs the separate specialisms of a comms package and a fully-blown flight simulator. This program creates the graphics you see on screen just like ordinary games. The information on the behaviour of other planes – that is, other players – is relayed via the host. The program also sends out information to the host about your position.**

Naturally not all computer owners can enjoy *Air Warrior* because the controlling software isn't available for all types of micro. However, you'll be pleased to know that ST and Amiga versions are available. So next time you're over in the States, you'll know who to call – and it ain't Ghostbusters!.

NETWORKS FOR THE AMIGA

CatenaNet from Catena Systems (where else?) seems to be the choice of many large organisations. Several dairies dotted around the country and Super Gas (suppliers of liquified fuel) use Catena's networking software and Ninetiles' node hardware. The ring network usually consists of several A2000s and various printers. In practice the ring can accept around 120 nodes.

Although CatenaNet is relatively slow, only transferring data at roughly 0.5Mbits per second, it can expand into a wide area network. This is possible because the system is connected together via the serial interface – and you know how easy it is to fit a modem to the serial port.

The hardware bits are available from Ninetiles (0223 862125), and cost £200 for the A500 and A1000 versions and £350 for the A2000 version. Network software from Catena, 0993 778271, costs £100.

The Amiga Centre Scotland is distributing an Ethernet kit for A2000 machines. It's expensive though; coming in at £750+VAT per node. Details on 031-557 4242.

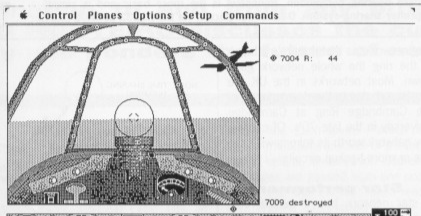
detect if other terminals are transmitting data.

All terminals on the network can do this at any time because of the multiple-access nature of the system. If two terminals listen simultaneously and detect no transmissions, they may both transmit data at the same moment. Both transmissions will then collide, but both terminals will detect the situation, and both will wait a random time before retransmitting the data. Clever stuff.

Network 1999

Greater data transfer rates will be the next thing in store for networks. Fibre-optic cable has opened up great possibilities: not only is the data free from electromagnetic disturbance but it also moves at incredible speed. The data bottleneck isn't with the cable-type though, but with the hardware transmitting or receiving it. Advances must therefore be made in computers before any appreciable speed increases can be gained in a network. Already there are rumours of a 100 Mbits per second network – that's almost 10 times faster than the current fastest! Look forward to the day that data can be sent and received at the speed of light.

Network standardisation is also necessary. Currently there are over 50 proprietory networks including Econet, Ethernet, Omninet, PC-Net... And they all have different topologies, transfer speeds, connectors and so on. In an ideal world every computer, printer and other I/O device would have the same network – call it IdealNet if you like. Similarly the software for IdealNet would be available for every machine. The result: harmony. Any computer in an office could speak or use any other computer, storage medium or printer.

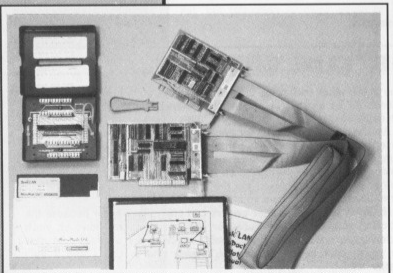


■ *Air Warrior on the Apple Mac. The planes you see from within your cockpit belong to other players that have logged on. You can blow other players out of the sky or befriend them and take on larger forces*

Imagine also if the processing power of idle machines in a network could be tapped by active computers. Transputers are based on this idea. But that's another story...

FUTURE NETWORKS

The art department's computers, laser printers and Linotrons (if you read last month's Futures, you'll know all about these devices) here at Future Publishing are hooked together using an AppleTalk 'network'. Although AppleTalk can be used for communicating with other micros and sharing expensive hardware, it doesn't let you access files stored on other machines. File sharing is obviously desirable, but unfortunately AppleTalk is too slow. The bus network transmits data at roughly 28.5K a second; two pages of ST Amiga Format text and graphics can consume 200K or more. Consequently Future Publishing's artists only use the network for printer sharing.



■ *A PC network kit – just plug in the extra hardware and get talking!*

NEXT IN LINE

The current crop of computers aren't provided with any easy means of networking. Sure you can buy an interface and some proprietary operating system, but it costs. Many of tomorrow's super computers will be suitably endowed.

One you might consider is Steve Jobs' NeXT machine. The 25MHz 68030 (plus 68882 maths co-processor) based computer will have, in its armoury, 8 Mb of RAM as standard, SCSI interface, read/write 3.5" optical disk (yes, read/write!) capable of 256 Mb of storage, display PostScript (what you see on screen really *is* what you get on paper), window-dressed Unix operating system, DSP56001 digital signal processing chip offering CD-quality 44.1 kHz 16-bit stereo sampling, and thin Ethernet port.

The coaxial Ethernet port means the NeXT machine can talk to virtually anything (*other PCs, small flexibly-plated edentates, fish, that kind of thing – Ed*). The AM7996 Ethernet transceiver chip drives the port at 10 Mbits per second. Don't hold your breath for this baby though: to start with it will only be sold to educational establishments, will cost around £4000 and its colour capabilities will be zilch.

Atari's multi-tasking, multi-user, 68030-based machine – which didn't make an appearance at Comdex as first expected – is still undergoing development in the States. Along with fancy graphic capabilities, 4 Mb of memory and Unix OS, an Ethernet port will be included.

When asked whether Commodore had any plans for a network system for their new 68020-based Unix board, a spokesperson offered: "I don't know of any work going on in that direction, but that doesn't mean nothing's going on." Good old Commodore.

The new release of Workbench includes limited multi-user support in the form of a new device handler called AUX:. By connecting a dumb ASCII terminal to the serial port of the Amiga, it is possible to run text-based programs on the terminal while the Amiga continues to run other tasks. The Amiga treats the extra terminal as a single CLI task and output to the terminal will therefore only appear as text. While this may seem of little use to most people, those who will find it invaluable are programmers. Already Amiga developers can connect the terminal as a debugging tool. – the Amiga includes a built-in debugger called ROM-Wack which, once activated, feeds debugging information to the serial port even when a program has crashed irretrievably.

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REVIEW
ing wax, and when the BBC are going to g
o the new series of Star Trek."
quote, from Lewis Carroll, is the key to
AWAY-DAY KING

PUBLISH AND BE SCANNED

What's the easiest way to get a picture onto your screen? Digitise it, of course. But you don't need to mess about with video cameras and studio lights – Cameron's new Handy Scanners provide instant graphics for the ST and Amiga. And you can read text from the printed page, too! BEN TAYLOR scans the facts.

COLOUR BLIND

Although the scanners work best on black and white images, you can scan colour images too. The output, of course, is still converted into shades of grey, so you'd have to work in the colours by hand later. The scanner seems unable to distinguish between red and white, and between blue and black, so pictures with mixtures of these colours don't scan very well.

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Low-cost digitising has taken off in a big way in the PC world, with hand-held scanners providing a cheap and simple way to get artwork into the machine. Desktop Publishing, paint packages and even word processing have all been revolutionised. The ST and Amiga, though, have been lamentably under-endowed in this respect – until now. Cameron's Handy Scanner range allows you to digitise pictures and read text, quickly, simply and without a video camera.

The scanner is a palm-sized box about 10 by 8 by 2 centimetres. A sensible length lead (about two metres) plugs into an interface box taking the signal to the computer. On the ST, the interface attaches to the cartridge port, and an external transformer provides the power. On our

review models, this power supply unit was supplied inconveniently moulded into a two-pin European plug, so you'll need a shaving socket adaptor to connect to a standard 3-pin job.

On the Amiga, the interface attaches to the expansion edge connector. The Amiga provides a power supply through this port, so no extra transformer is needed. If you have an A2000, you'll have to take the scanner and your machine apart to get at the relevant slot, but it isn't too difficult.

There are two models of scanner at the moment – Type 2 and Type 3. Both work at 200 dots per inch resolution, but the Type 2 only recognises black or white while the Type 3 can cope with 16 shades of grey, making it much more suitable for scanning photographs. A Type 4 boasting 400 dpi resolution is promised for early in the New Year. Also available in the Cameron range is the 'Personal scanner' – a flatbed scanner for complete A4 pages, but we haven't been able to test this with the ST or Amiga.

Grab that picture!

Only one thing remains before getting down to business – installing the software. Cameron sell their products in Germany, France and England, and you have to install your program to give you menus and messages in the correct language. On the ST you just click on ENGLISH.PRG the first time you use the scanner, but on the Amiga the installation process is difficult. You have to copy your Workbench disk then run a program from the CLI which needs plenty of disk swaps if you don't have two drives. The manual's instructions are poor, as well as being pretty badly translated from German.

Once you've set everything up, scanning an image is simplicity itself. Make sure your original is on a firm flat surface, place the scanner over the start of the area and sweep it smoothly downwards. There's a contrast control to get the best results from a particular image – trial and error is the key.

What does 200 dots per inch resolution look like in practice? The Handy Scanners are 64 millimetres wide, which is 2.5 inches, thus making 500 pixels-worth. Screens are usually 400 pixels vertically, and doing some reverse mathematics this means that you get a 2 inch (50mm) sweep length. You can therefore get a scan area of 64mm by 50mm – not all that big, although you can build up scanned strips into a composite image with the supplied art package – more later.

The magnification factor is disconcerting at first – 500 pixels on screen take up about 8 inches, compared to 2.5 on paper, so things appear three times bigger than life.

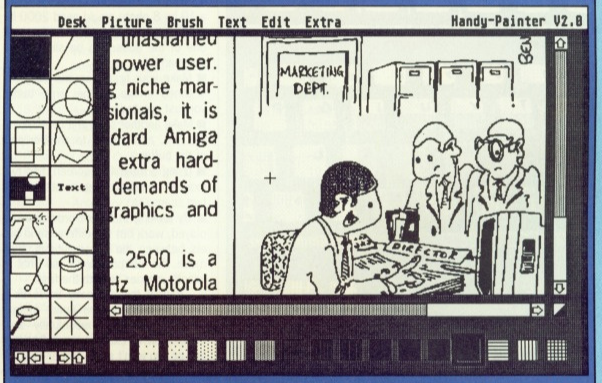
HOW IT WORKS

The Handy Scanners are cunning little devices. A row of red light emitting diodes (leds) shine downwards onto the image under scrutiny. The light is reflected back and gathered by a lens and light sensitive cell and the appropriate pixel codes are transmitted to the computer.

The clever part is that you don't have to be particularly careful to move the scanner at a constant speed. A roller underneath the scanner, in contact with the surface being scanned, rotates as you drag the unit along. The processor within the scanner counts the rotations and works out how many pixels-worth you have scanned. Whether you move at a snail's pace or warp factor 9 you get a reasonable scan.

The A2500 is an unashamed workstation for the power user. Aimed at the growing niche market of video professionals, it is based on the standard Amiga 2000, but includes extra hardware to satisfy the demands of processor-intensive graphics and animation programs.

The heart of the 2500 is a card with a 14 MHz Motorola 68020 microprocessor. A 68881 maths co-processor comes as standard, with 2Mb of fast 32-bit RAM and a 40Mb hard disk. Workbench 1.3 is all in the deal.



■ *Cartoons and other line drawings scan well, even with the Type 2 scanner – original above, and scan below. The outer edges of the screen show the menus of Handy Painter, the paint package supplied.*

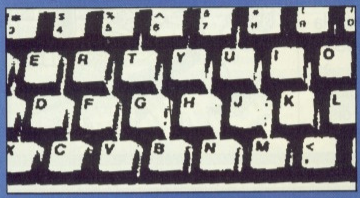
SHADES OF GREY

If you've got a black and white monitor, you may be wondering how a scanner can produce 16 shades of grey on it. After all, once it's on your screen a pixel is either black or white, innit?

The Type 2 scanner is a simple mono unit, working at 200 dots per inch. Each of these dots has to be either black or white, which is fine if you are scanning something like an etching or a cartoon. However, photographs are not black or white – they are made up of a continuous range of grey shades. When you scan a photo with a Type 2 scanner, the unit takes all pixels lighter than a certain shade as white, and darker ones as black. This gives a very unnatural effect.

The Type 3 scanner tackles this problem by measuring every pixel and assigning it one of 16 grey shades. Since ST and Amiga screens don't normally support grey shades, the scanner does a subtle averaging operation and converts the grey shades into a block of 4 by 4 pixels which it sends to the micro. 4 times 4 is 16, of course, the same as the number of grey scales, and thus the ST's or Amiga's screen can simulate the different shades of grey, giving a much better rendition of photos.

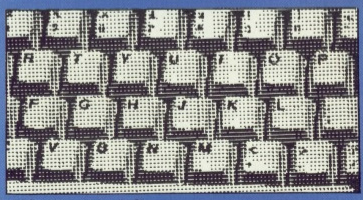
■ *An original photo of a keyboard*



■ *Scanned in two-tone mode*

■ *16-grey scale (mode 1)*

■ *16-grey scale (mode 2)*



■ *16-grey scale (mode 3)*

■ *The Cameron Type 3 scanner works in four modes – a black and white scan and three varieties of 16 grey scale scan. The first option is best for cartoons and line drawings, the last three are better for photos – the one you use depends on the photo.*

Building up

The main scanning software on both ST and Amiga is a painting program, *Handy Painter*. This only runs on mono screened STs, although any Amiga will support it.

If all you want is a single sweep scan – 64x50mm – then life is simplicity. Select 'Scan' from the menu, do the business, and when you're happy with the result save it to disk. If you want to scan a bigger picture, you'll have to scan it in strips and piece them together by hand. Luckily Handy Painter provides the tools.

There are seven 'buffers', or painting areas. Each buffer can be any size you like, memory permitting, so you aren't restricted to screen-size scans. A conventional set of cut-and-paste functions let you copy. data between buffers. So, armed with this knowledge, your task is as follows:

■ Work out how many pixels your total scan will take up – for instance, a 10 by 8 photo would need 2000 by 1600 pixels at 200 dpi – and set up one of the buffers to be slightly bigger than this.

■ Make your first scan and copy the scanned image to the large buffer you just created

■ Make another scan just overlapping the first, and copy it to another part of the buffer.

■ Using a magnified screen, find two exactly corresponding points on the two scans.

■ By looking at the co-ordinates displayed, work out the difference in pixels between the two positions, then move the second block so that it exactly marries up with the first.

Repeat this as many times as it takes to build up the entire image. You need to make absolutely sure each scan is exactly parallel to the last or you won't get a proper match.

There are no 'preview' commands to show the complete image as you assemble it, so with images larger than the screen you're working blind.

Once you've got the best image you can, you may need to shrink it down to fit on a single screen, ie. 640 by 400 pixels, particularly if you want to export it for use with other programs. On the ST, a utility to convert Handy Painter files to Degas format is provided – Degas can't handle images bigger than one screen.

As you'll have gathered, it is hard work to build up a good image of a large scanned area, but the results can be excellent.

READING TEXT

But wait – scanning pictures off a page to store them in your DTP package isn't all the Handy scanners can do. What makes them unique, certainly in budget scanning systems, is the ability to recognise text from a morass of graphics. In other words, you can feed it a page of writing, and after a bit of thought it will tell you what the words are. Just think of the potential advantages – if you've got a cupboardful of old archives, you could transfer them onto computer disk and get them into your word processor.

On the system we reviewed, the *Handy Reader* software was only running on the Amiga, although Cameron said the ST version should be available by the time you read this. 1Mb of RAM is recommended when using *Handy Reader*.

The first stage is to scan your text page into memory. You must use a Type 2 scanner, or a Type 3 switched to two grey scale mode because you need definite on-or-off states for the pixels, no wishy-washy grey-scales.

Because the scanner width is only 64mm, you have two scanning options: vertical or horizontal. If you are reading magazine or newspaper columns they may be narrow enough to fit in one sweep, so just scan straight down the page. With a megabyte of memory you'll be able to scan a column up to 45cms deep.

However, an A4 page is 210 mm across, wider that the 64mm scan head. The solution for a typical typescript is to put the scanner sideways on the page and sweep it left to right – once you've gone the full width the

WHAT OCR IS

In case the difficulty of Optical Character Recognition – reading text off a page – hasn't yet struck you, here's the problem. Once you've scanned a portion of text, you can display it on screen. Now it may happen that what you scanned was a message saying, "Llamas like honey", but to the computer all you've got is a pattern of pixels. It has no idea what the juxtaposition of one pixel here and another there means when perceived by the human eye.

So, what the computer has to do is take a scanned image and work out what it says. The first thing it does is try to isolate each letter in turn – working across the page it looks for blocks of black pixels on a white background, and takes that to be a letter. It follows that text you scan must not be joined up at all, and the printed letters must be of a high enough quality that they are unbroken.

Once a letter has been found, it is compared with the font data until a match is found.

OCR software lives and dies by how well it can cope with subtle variations in typestyle, and how well it copes with variation in scanning quality.

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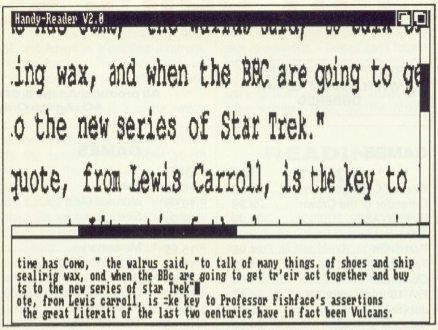
software rotates the image, as though you had scanned a column 210 mm across but 64 mm deep.

Once the page has been digitised, you can choose an area of the image and ask the program to recognise it – turn it from a graphic screen into an editable text file.

How well text is recognised depends a lot on the font used – the body text of this magazine is in a font called 'News Gothic', which is quite different from the `typewriter style 'Courier' font`. Handy Reader comes preset to recognise Helvetica, TimesRoman, Bookface, Typeface and Digits fonts. You pick the one closest to the style of your document and load the font into memory before starting the recognition program going. Unhelpfully, the manual doesn't show you samples of all the fonts it knows, but choosing the right one is critical for good results. 'Typeface' is best for typed documents, 'TimesRoman' for book pages... try them and see which works best.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.o the new series of Star Trek."
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ts to the new series of star Trek"
ote, from Lewis carroll, is -ke key to Professor Fishface's assertions
the great Literati of the last two oenturies have in fact been Vulcans.

■ *The text recognition screen for Handy Reader. The scanned image is in the top half, and the result of the attempted read appears below.*

from the menu, and fine tune the recognition process by correcting each suspect letter in a page of the target typeface. The program goes through the scanned image finding each letter, makes a guess as to what it is and asks you for confirmation. If it has guessed wrong you can correct it, then the next time it encounters that shape of letter it will know it is a B not an 8, for instance.

After about a page of A4 text, which takes about an hour to go through by hand, you can save your newly customised font recognition data. The program should give a much better recognition rate after training – Cameron claim up to 98% accurate, but you'll be lucky to get over 90% in practice. The recognised ASCII text can be tweaked using an inbuilt mini-editor, and then saved to disk for bulk word processing.

Recognition rates run at around 10 characters per second.

Full page makeup

With A4 Pages being 21 cm wide, you will typically only be able to scan a 64 x 210 mm strip at a time. This small area won't contain much text, so Cameron have provided a kind of batch-processor to speed things up.

Scanned areas of text can be saved to disk in image form, so the trick is to scan an entire page in strips – probably five per A4 sheet – and save them as files to disk. They will probably be called SCAN.001 to SCAN.005. You can then choose the 'Load and Recognise' option which automatically loads each strip, extracts the text from it, loads the next one, appends the text, and finally saves the complete text to disk. All this happens while you are off having a good time.

■ *The black Type 2 Handy Scanner, and beige Type 3*

Look and learn

Your first attempt at OCR is likely to be fairly dismal, with maybe only one character in two being correctly recognised. This is because the inbuilt fonts probably don't quite match the one you are reading – what you have to do is teach Handy Reader your own custom typeface.

Starting from the closest of the built-in fonts, you select 'Teach-In'

The outer limits

So, in the final analysis, how effective are the Handy Scanners at doing their job?

Text recognition is a nice idea, and for a relatively cheap package (such systems can run to tens of thousands of pounds) is very impressive. However, the Handy Scanner width is too small to be useful. Once trained, the software is quite effective – if you were to invest in an A4 flatbed scanner and hard disk you would get a genuinely useful system.

As to general image scanning, without doubt you should go for a scanner with grey-scale support – our review Type 3 model will have been upgraded to the higher resolution Type 4 by the time you read this. The extra flexibility of scanning photographs is well worth it. The contrast controls on the scanners are very sensitive, and you'll be able to get near-perfect images out of a cartoon or simple line drawing using either-model. The maximum 64mm scan width is small, and it's a pity that there aren't simpler commands for pasting several scans together into a larger whole – it's a sweat with the primitive editing provided, and the manual isn't very good.

Overall, a Handy Scanner definitely offers a cost-effective and productive way of injecting graphics or text into your ST or Amiga.

IN-FRINGING

When you resize a scanned image – particularly if it is a shaded grey scale image – you tend to get 'Moire patterns' (pronounced Mwarray) if the zoom factor is not an exact fraction, say 25%, 50% or 75%. Handy Painter offers a nice function called 'Pattern Zoom' which recalculates the grey scales in a picture to smooth it out within its new dimensions.

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

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for

- Compact and simple to use
- Unique OCR software cuts typing out
- 3 types of grey scale for photos
- Can assemble images larger than screen size

against

- OCR software needs hard work for best results
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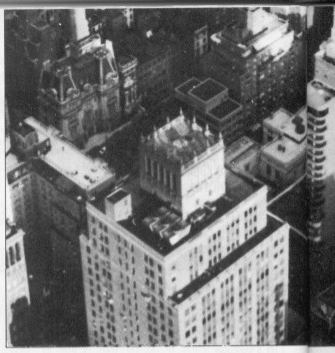


Wondering about the future of the new Atari ST or Amiga computer you just bought? Check it out with the American market. MARSHAL M. ROSENTHAL, our tireless (mostly) contributing reporter, has gone on a safari around the United States to bag the answer for you.

Let's start off with good news – both the Atari ST and Amiga are doing well (though not great) here in the States. And success breeds success – software houses don't bother making products for failing systems.

One of the most successful producers in the US is LucasFilm Ltd's Games Division, one of the most successful in the US. Starting from their first entry, *Ballblazer*, on to the more recent *Zak MacKracken* and *Alien Mindbenders* – all their games have been clever and innovative. But they've never made any appearance on a 68000-based machine. "Until now," says David Fox, software designer and project leader.

Fox has been with the Games Division from the start, and knows what proper programming can do to enhance a product; even when it was originally designed on another computer. "Zak will shortly be making its Amiga debut, and the ST won't be far behind," begins Fox. "There are enough machines out there to justify the conversions – and we're taking full advantage of the hi-res and sampled sound capabilities. "Additionally," says Fox, "we'll be releasing a good number of new programs on the Amiga and ST in 1989 – we plan to become a strong part of the software for these computers."

■ ***David Fox of LucasFilm's game division. A couple of their titles are on the other page... ST and Amiga owners can expect solid support.***

Agreeing with that is A.J Redmer, head of LF's product development. "It takes time for a computer to become strong enough in the field to attract software houses", he remarks. "The ST used to be troublesome because of the single versus double-sided drive business; multiple disk costs were annoying and a packaging problem. But Atari addressed the issue by dropping the single-sided drive." "Meanwhile," says Redmer, "the 3.5" disk is now becoming a standard, reducing duplication costs as well. All this adds up to a greater viability in the health of both the ST and Amiga."

A pint in a quart bottle

Chris Crawford gladly listens to anyone advocating the opening of doors for 68000 programmers. He was one of the first game designers to dispute the advice of marketing personnel on what would and wouldn't sell to the public.

The results over the years have been impressive. Such programs as *Eastern Front 1941*, *Balance of Power*, and *The Legend of Siboot* have shown him an uncompromising purveyor of games that push past the easy boundaries of shoot-'em-ups. Crawford sees the complexity of software as the main issue facing the future of these computers.

"Years ago", he says, "machines had a total of 48K to play with. To make do with that required squeezing every last bit out of the code, of using assembly language. Now we have plenty of room, 128K, 512K etc, and there's no impetus to fill it up. We're left with a big empty house that echoes with 48K games. Or at the best, a number of 48K modules combined together.

"There's a real need in games for believable characters that possess human values," Crawford says. "Forget about silly enhancements and huge manuals – programs need to have substance, and it won't happen just because the hardware allows more hoopla. Designers need to be aware of this because the audience doesn't really know what they're missing. It requires thought and consideration on the part of game designers, and they can't take the easy route out by making insipid meaningless games even if they sell. The fact is that the potential is waiting here, and it needs to be exploited."

From the horses' mouths

Meanwhile over at Power Without the Price (®, ™ etc.) themselves – things continue to be fairly low profile.

1040S ON THE ROCKS?

'Buying talk' pricks up Bruce Mendel's ears. He works for Park Avenue Video in New York; a dealer for the Atari ST line. "The Mega-2"s are selling real well, especially as no 1040ST's can be had anywhere, " he says. Mendel agrees with Crawford about the demand for greater and greater memory. "People used to be satisfied with 64K, 512K – but now they just can't get enough". Mendel estimates ST software sales as being divided roughly down the middle, with 50% going towards desktop publishing and word processing, the other half being arcade and rôle-playing games. "The ST is a strong contender once you get past the negative 'gaming only' Atari image," he says. "It would be nice if Atari advertised a lot more so that people knew just what the ST could do".

As a side-note, the store has been carrying *ST Amiga Format* magazine since October. Mendel notes that, "We only get in 25 copies, and they disappear real fast".

However, new products are appearing: The Mega File 20 has been replaced by a new 30MB model – there's a 60MB version upcoming for those really big users – and there's a new 1200 bps modem for under $100.00. Atari's move to dealer-only retailing seems to be paying off; dealer support and word of mouth is making more people aware of just what the ST line is all about. Atari is also out to gather more attention through their SLM 804 Laser Printer (which owes its low cost to a micro design that supports it). "We're out to shatter the myth that high-performance desktop publishing has to mean a high price tag", says Atari Corporation President Sam Tramiel. Not an easy man to reach, Tramiel goes on to note wholly impartially that bundling Mega 2s with the Laser printer is extremely cost effective, but that paying less doesn't mean getting less.

Much more accessible is Keith Masavage, Manager of Market Development – Amiga Products, from Commodore. Such a title may be a little long for a business card, but Masavage accepts the responsibility and inevitability of a future laden with increasingly more sophisticated software as a result of the attractiveness for the Amiga. "I see a greater commitment towards both graphic-intensive use and Desktop Publishing" he says. Commodore has put their money where Keith's mouth is by releasing version 1.3 of the operating system, as well as two new versions of the A2000. The 2000HD includes a pre-formatted 40MB drive, and the 2500 ups the ante with 2 MB of RAM on a 68020 32 bit processor and 68881 maths co-processor. "That's quite a mouthful," grins Masavage, "but it shows just how committed we are to fulfilling the needs of graphic intensive programs. Plus there's a lot of 3rd party hardware developers out there adding to the pot."

Too much of a good thing

Expert Services of Kentucky echoes that feeling. Vice President Terry Timko says it's hard keeping up with the demand for Amiga 2000's – but you can tell he's not really complaining. He also notes that more and more users are interfacing their Amigas with video, and that animation programs and Font sets (like *KARA Fonts*) are being snapped up. "Devices like Progressive Peripherals FrameGrabber are so popular that they seem to fly off the shelves," remarks Timko.

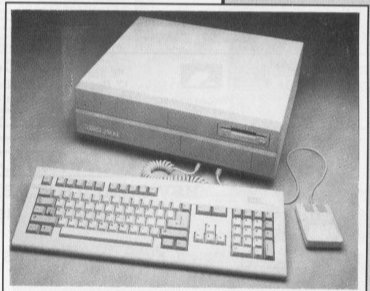
Meanwhile Epyx software is on the move – literally as well as figuratively. As Joe Miller, Vice-President of Product Development, watches his desk being carted off to his new office in the expanded space next door, he comments, "We're making a huge commitment to the 68000 market." This calls to attention the fact that Epyx not only markets U.S Gold ST products in the States, but has also combined forces with the French software House Infogrames. "The software for the 68000 computers lets you create in ways that just couldn't be done on the 8-bit machines. More and more new products are being designed to take advantage of the superior graphic abilities, not to mention the greater storage on disk." Miller makes clear that this is the beginning of the end for conversions – products on the 68000 computers will be oriented *for* them, rather than ported over. "Besides a greater richness, I see new categories of gaming entertainment opening up as a result," he says.

Broadcast quality

Bill Williams is a case in point. A software designer with such games as *Sinbad* and *Mindwalker* to his credit, his latest release is an Amiga arcade adventure called *Pioneer Plague* (Antic Software, or Mandarin in the UK) – it's also the first one to run in the 4,096 colour Hold 'n' Modify graphic mode (HAM). Williams sees the continuing success of the Amiga falling into the hands of designers like him, who must produce entertainment that is challenging as well as fun.

"Everyone is trying for graphics that look as good as broadcast television, and sound like a music video." "But," Williams states, "by trying to emulate other mediums, computers ignore their real potential. Software can never become another *Gone with the Wind* unless it develops some emotional content, and stringing some events together and calling it an interactive story is silly – you have to do a lot more than that. The games must involve the player on an emotional level, so that there's an interest in the characters and what happens to them."

So what happens next? More software, hardware – more blurring of the boundaries between what could once only be done conventionally and has now become the province of the computer. There's really no question that the 68000 machines, the Atari ST and Amiga, will be around for a long time. It's also evident that the software designers, as well as the companies producing peripherals, are looking ahead into the next century with open eyes and a desire to excel. But what exactly is going to happen? Wait and see. After all, 2000 AD is just around the corner.



■ *The A2500 – new 68020-based top of the Amiga range*

TAKING ON THE MAC

David Small (Gadgets by Small) takes a different tack on programming. His *Spectre 128* cartridge enables an Atari ST to emulate an Apple Macintosh SE – also based around the 68000 microprocessor – near letter-perfect. Some might remember his previous ST Mac emulator *Magic Sac*, which became outdated with the release of the Mac 128K ROMs. Small sees his job as pushing against the envelope – extending it, and moving beyond.

"There's a special feeling I get from doing all this", he says, "Sometimes an idea comes to you, you code it up and try it, and it works. And the limits of 'possible' get pushed out a little farther". To Small, supporting one 68000 computer means doing good for all of them. He sees this point as one that can compel more people into buying and using 68000 machines.

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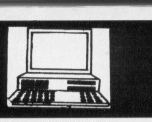

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DISK EXTRA

ST Amiga Format's unique dual format disk gives you the best of both ST and Amiga worlds! JASON HOLBORN skims the cream from huge vat of PD-ware and reader-ware to get your new year off to a sizzling start.

▲ *Purple Saturn Day – ST & Amiga*

ST

34 PURPLE SATURN DAY
You've seen the review, you've read the advertisement, now experience Purple Saturn Day for yourself. *Format* and *Infogrames* have joined forces to bring you this mega demo.

35 DATABASE CONSTRUCTION SET
Realise the potential of your ST within the modern, electronic office with this powerful database system. Organise anything from your Armadillo breeding business to the local parish records.

35 MESSAGE WRITER
Who says the ST can't handle smooth scrolling? Take a look at this program and you'll soon change your mind.

36 DOSACC
At last! All the Desktop functions you'll ever need in one amazing program. Forget your file copiers and your disk formatters, DOSACC does the lot!

38 CHEATS
We've got a bumper collection of cheats for you this month; SIX in fact. Get sneaky and get the better of ELITE, Thundercats and others.

AMIGA

34 PURPLE SATURN DAY
Yep, Amiga owners too can enter the magical world of Infogrames Purple Saturn Day with this month's great cover disk demo. Sit back and be amazed.

34 SCENERY
Explore the fascinating world of fractal graphics with your Amiga. Just sit back and watch as a whole new world unfolds before your very eyes!

35 SCREENX
Need a screen grabber? A screen printing program? How about a clock? A Free RAM display utility? ScreenX has got the lot!

38 BOOTSAVER
Never again will you loose an item of software because of virus infection. Keep those custom bootblocks filed away for safe keeping with BootSaver.

36 CRUNCHER
Pack more programs onto your disks with this excellent file cruncher utility.

38 CLI HELP
A great little program for the CLI'ers among you. Whether you're a hardened hacker or just starting out with the CLI, CLI Help will give you all the information you need at your fingertips.

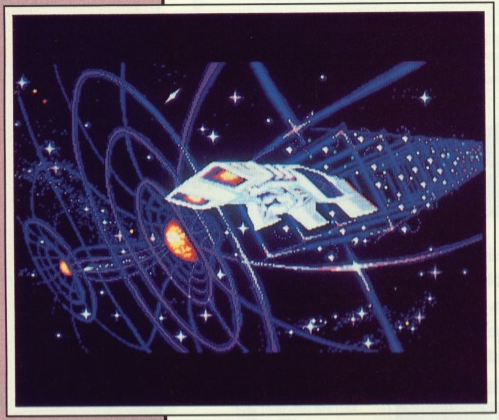
▲ *Fractal Scenery generator – Amiga*

WIN A SHARE OF £800! FOR GOOD SOFTWARE ON OUR COVER DISK

We're looking for good quality software to fill our cover disk each month. If you're a nifty programmer you could earn big bucks from your labours – games, business applications, utilities, or anything of general interest.

Turn to the end of this section for more details on how to get your software onto the Format cover disk.

DISK



THE FULL VERSION

Purple Saturday Day for costs £24.95 on both the ST and Amiga and is published by Infogrames. Both versions should be available by the time you read this.

PURPLE SATURN DAY

All colour STs and Amigas
FILES: PURPLE.PRG, several .NEO files

Infogrames had a problem: what on earth could they do after the blockbusting success of *Captain Blood*? When we saw the follow-up, *Purple Saturn Day*, we were so impressed that we gave it one of our cover Format Gold review awards this month. And we just had to get a demo so you could see for yourselves.

Once every year, the skies above Saturn glow with a mysterious Purple radiance. This natural phenomenon is the sign for all the peoples of the neighbouring systems to converge on the ringed planet for the annual galactic olympics. You have been chosen to represent the peoples of the Earth to defend the honour of the human race.

The opposition is tough though, no holds barred is the order of the day. The devilish tactics used would even have Ben Johnson throwing his hands up in horror. You must compete against 16 other finalists through four levels of increasingly difficult gameplay for the ultimate prize, a kiss from a beautiful alien maiden.

In the full game – reviewed this month on page 52 – your first challenge is the Ring Pursuit which takes you into the hazardous rings of the planet Saturn itself. You'll need quick reactions and a keen eye to avoid the massive chunks of frozen rock and ice that hurtle towards you at a terrifying speed. Next up is the Tronic Slider challenge which has you racing around an intergalactic arena collecting energy balls.

Third is the Brain Bowler Challenge. The action is set on a large alien brain that has ceased functioning. Your task is to get your half functioning again by connecting all the chips together so that the brain pulses have freedom of movement. Your opponent, disgruntled by your progress will occasionally wander across into your half and attempt to destroy your hard work.

To save you the emotional trauma of being responsible for the human race's dignity, you don't actually have to do anything stressful in this demo. Just hang on to your hat and watch the stunning graphics of Purple Saturn Day.

Both ST and Amiga versions will automatically run when you reset your machines with your cover disk in the internal drive.

SCENERY

Public Domain
All Amigas
FILES: SCENERY, SCENERY.DOC

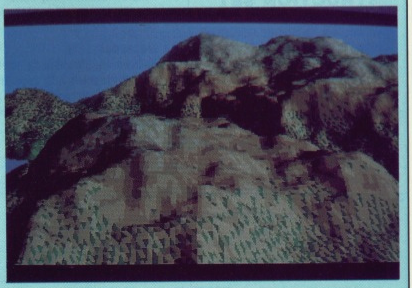
Designing planets is a complicated business. What with mountains, ravines, valleys and lakes, creating a whole new world can be a tiring task indeed. If you're a would-be Slartibartfast (remember the crinkly bits round Norway, Hitchhiker fans?) and you're starting to find this creation lark is taking it out of you, then let your Amiga do the job for you.

Scenery is a program that uses some very complicated mathematics to create some very interesting results. The program uses Fractal graphic techniques as used by super computers such as the Cray to create random landscapes of almost unbelievable realism. Fractal techniques are used extensively within the film industry to create graphics for sci-fi films such as *Star Trek*. If you've seen any of the more recent blockbusters, chances are that the asteroids and other planetary objects were created on a super computer using fractal graphic techniques.

The landscape generation takes a random number as a 'seed value' which can either be randomly generated or chosen by you. Seeds of 1000 upwards seem to give interesting results. Other options include the ability to increase the height of the 'camera' from zero right up to 8000 feet. The water level and the height of mountains and hills can also be selected from the pull down menus.

Landscape generation is reasonably fast when you consider the Earth took millions of years to get to its current state! It can take as little as five minutes for a scene to be rendered – impressive when you consider the complex maths in fractals. Once a landscape has been created, selecting 'Save Screen' from the Project menu will save the screen in IFF format for loading into a paint package such as Deluxe Paint or Aegis Images.

You can load Scenery either by selecting it from our cover disk menu program, Click_Me or by alternatively clicking on its icon on the Workbench. Instructions are available within the Scenery drawer.



ST

First, copy and load the disk as described at the end of the Disk Extra section.

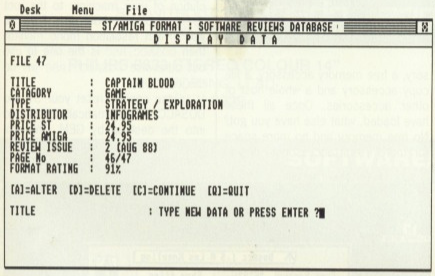
DATABASE CONSTRUCTION SET

By M. Montgomery
Colour STs (medium res.) only
FILES: DATABASE.PRG, DATABASE.DOC

Of all the different types of computer program ever written, the SpreadSheet, Word Processor and the Database have undoubtedly become the most popular. Throughout the world computers of different shapes and sizes, and of varying complexity offer these three basic types of program in one form or another. You don't need a degree to guess what class this month's cover disk program falls into.

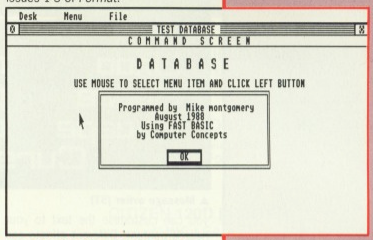
Database Construction Set is a powerful GEM-based database management system that boasts some impressive features. The program can handle up to 500 records in memory at any one time and a maximum of fourteen fields, all from a friendly GEM environment. You'll feel instantly at home with the Database construction set.

Once you've decided on your file format, Database Construction Set offers a whole host of tools for managing your data. Tools include sorting on any field, fast searching from any field and many others.


Desk Menu File
ST/AMIGA FORMAT : SOFTWARE REVIEWS DATABASE
DISPLAY DATA
FILE 47
TITLE : CAPTAIN BLOOD
CATAGORY : GAME
TYPE : STRATEGY / EXPLORATION
DISTRIBUTOR : INFOGRAMES
PRICE ST : 24.95
PRICE AMIGA : 24.95
REVIEW ISSUE : 2 (AUG 88)
PAGE No : 46/47
FORMAT RATING : 91%
[A]=ALTER [D]=DELETE [C]=CONTINUE [Q]=QUIT
TITLE : TYPE NEW DATA OR PRESS ENTER ?

Before you attempt to use the program, the first thing you must do is to copy the database and its related files to a separate disk. (To copy DCS, drag the Database folder from its window onto the drive B icon and follow the disk swap requests.) The program will work fine from our cover disk but as soon as you create a new database or edit the demo file, Database Construction Set will attempt to write to the cover disk which could corrupt our special disk format.

Full instructions and a demo database are included within the database folder. You may find the demo database of particular interest as it lists all reviews that appeared in issues 1-3 of *Format*.



MESSAGE WRITER

By G. Pople
Colour STs only
FILES: M WRITER.PRG, M WRITER.DOC, TEXT, COLOURS

Calling all home video buffs! Have you ever fancied using your ST for video titling but just couldn't find the right software? Look no further, *Message Writer* is here! Just type the text to be displayed and sit back and watch as the results are scrolled smoothly across the screen in a super high resolution font.

Even if you aren't involved in Home video, Message Writer should still be of interest to you. Whether you run a shop or are trying to sell your granny, Message Writer will give you that added advantage that will get your message across.

Using Message Writer is simplicity itself. When you run Message Writer, the text to be displayed is read from a file appropriately called TEXT. By loading this file into a text editor,

SCREENX

Public Domain
All Amigas
FILES: SCREENX, SCREENX.DOC

As the saying goes, "The small ones are the juiciest," and that's certainly true of *ScreenX*. Hidden behind its seemingly tiny Workbench window is a myriad of wonderous features for all Amiga owners. From the most experienced machine code programmer to the casual Workbench user – everyone can benefit from ScreenX.

ScreenX is a collection of handy utilities bundled into one compact package. When you first run it, a tiny window title bar will pop up onto the Workbench screen displaying all sorts of useful information such as free memory and the time. To get into the program proper you first click the left mouse button on the ScreenX bar to activate it, then click the *right* mouse button also in the title bar. The ScreenX screen will pop up.

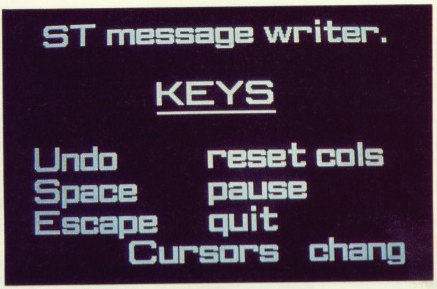
All your active Amiga screens are listed out. For instance, you'll have a screen for ScreenX, a screen for the Workbench, and maybe a screen for the CLICK_ME menu program if that is running too. Click on the screen name to select it, then by choosing the appropriate items you can dump the screen to an IFF image file or to the printer, you can kill the screen to recover its memory – or just get information about the screen (its size and number of colours – handy for programmers).

Full instructions are included in the program drawer.

SCREEN FACTS

Amiga newcomers may be confused by the idea of a screen. Programs usually open a private area of memory for their own display purposes, but since the Amiga is multitasking there might be several 'display screens' open at once. Think of these as being stacked up on top of one another – you only see the top one. Use the left Amiga key and N to flick through the stack.

ScreenX gives you info about all active screens – not about all active programs. If two programs share a screen (eg. two CLI tasks outputting on different windows on the same screen) you'll only get one entry in ScreenX.



▲ *Message writer (ST)*

you can customise the text to your heart's content. Different effects can be achieved such as changing the scroll type, underlining text and others by simply inserting control sequences within your text file. These control sequences are listed with the program's documentation file.

You can run Message Writer by either clicking directly on the M_WRITER.PRG icon. Alternatively to give the old mouse button a rest, Message Writer can be run by clicking on the Message Writer icon on the Desktop. Full instructions are available within the M_WRITER folder.

DOSACC

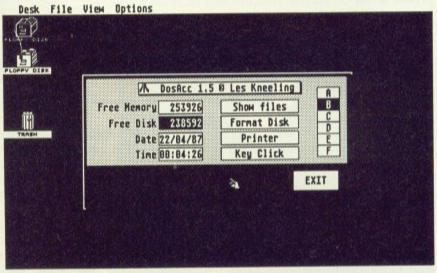
By L. Kneeling
All STs
FILES: DOS.ACC, DOSACC.RSC, DOSACC3.RSC, DOSACC.DOC

So you've got a disk formatter accessory, a free memory accessory, a file copy accessory and a whole host of other accessories. Once all these have loaded, what else have you got? No free memory and no more space for more useful accessories! (If you don't use DC STUFFER that is).

DOSACC is just bursting with features. From just one program you can have Free memory and disk meter, date and time setting facility, a fast disk formatter, a file display utility, a file copier, full featured file management and a whole load of other wonderful features.

DOSACC, as the name suggests, is a desktop accessory and will not therefore run from the Desktop. To use DOSACC, copy the files DOS.ACC and either DOSACC.RSC or DOSACC3.RSC depending on the resolution of your machine, to the root directory of your boot disk. If you've got a high resolution mono monitor then DOSACC.RSC is the one to use but otherwise DOSACC3.RSC will do the job.

Once copied, reset your ST and DOSACC will automatically be loaded into the desktop by GEM. The program can now be run by selecting it from the DESK menu. Complete



▲ *DOSACC (ST) giving you the run of the shop*

CRUNCHER

Public Domain
All Amigas
FILES: CRUNCHER, CRUNCHER.DOC

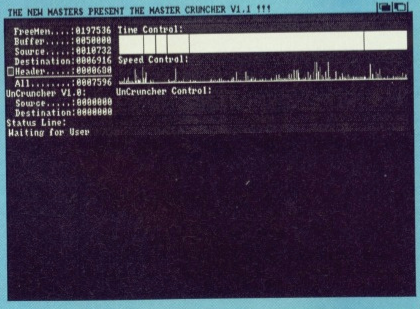
Disks are never quite big enough, are they? Here's a great program which takes your program files and crunches them down so you can cram more on to a disk.

File compression utilities are certainly nothing new; just look in the PD libraries and you'll find a whole host of different utilities all claiming to be the best available. The disadvantage of nearly all these file compressor utilities is that a compress filed is of no use to anyone unless it is passed through a decompress program. Cruncher, however, is different. Just crunch your program and that's it, no decompression programs required. When you try to run a program that has been compressed, this loader will automatically carry out the process of de-crunching before your very eyes as it loads the program into memory. The program then runs normally after a couple of seconds wait.

Cruncher crunches program files only; it cannot handle data files such as text from a word processor.

Cruncher works both ways – if you ask it to crunch an already crunched program, it will cleverly realise that and decrunch it for you. This way you can recover the originals from crunched versions.

Full instructions on the use of cruncher are available within the cruncher drawer.



DON'T GET LEFT OUT!

As you may have noticed, we often refer to programs published in past issues of *Format* but unless you've been with us since issue one then you could feel rather left out! If you want to get your hands on any of our back issues then you'll be overjoyed to know you can still buy past issues at their original cover price. Write to: ST Amiga Format Back Issues, Future Publishing, The Old Barn, Somerton, Somerset TA11 7BY.

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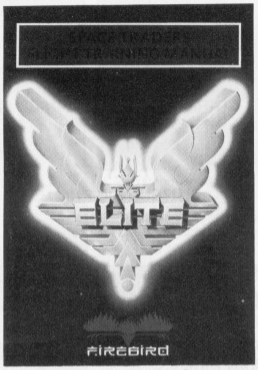
CHEATS

By C. Kingsley and L. Derbyshire
All STs
FILES: ELITE.TOS, ICECHEAT.TOS, NEBULUS.TOS, THRSTCHT.TOS, THUNDCHT.TOS, ZYNCHEAT.TOS



Who says cheating is unfair? When the fate of the universe is at stake, there's no option but to use every tactic at your disposal to stop the advancing alien hordes, mutant tomatoes and armadilliod stormtroopers from doing unspeakable things to your pet coypu. A little trickery now and then is a small price to pay to bring peace and justice to the universe.

This months cheats are for *Elite*, *Beyond the Ice Palace*, *Thundercats*, *Zynaps*, *Nebulus* and *Thrust*. Most include full instructions within the program itself but if you're baffled by the bumf, we've included a short documentation file within the cheats drawer.

instructions are available within DOSACC folder.

AMIGA

First, copy and load the disk as described at the end of the Disk Extra section. These programs run on all three Amiga models. We have been unable to test them on the early version of the Amiga 1000.

BOOTSAVER

By S. Warden
All Amigas
FILES: BOOTSAVER, BOOTSAVER.DOC

One of the most annoying traits of virus programs is the damage that they can inflict on games and other protected software. If you've ever lost a game due to virus infection, BootSaver will be of great interest to you.

Most commercial games have special copy protection which in the form of 'custom boot blocks'. which tell the machine how to load the game. Unfortunately viruses (and virus killers too!) work by altering these boot blocks, and this will usually trigger the copy protection and prevent the game loading even though the actual program itself is still in tact.

BootSaver is simple utility written to recover from such an event. The program works by reading the first two sectors of a disk (the boot block) and storing them in a file. If the unspeakable happens and the boot block of a game disk becomes corrupt, by simply reading the boot block file back from disk and then re-writing it to the corrupt disk, the game can be restored.

If you own a large collection of games then it may be a good idea to protect your investment by keeping a library of all the boot blocks on a separate disk.

You can load BootSaver from either of cover disk menu program, Click_Me, or by clicking on the BootSaver icon on the Workbench. A full description of the technical ins-and-outs of the program complete with a tutorial are available within the BootSaver drawer.

CLI HELP

By G. Ismay
All Amigas
FILES: HELP!, HELPA.HELP, HELP.DOC

Fighting your way through the complexities of the Amiga's Command Line Interface (CLI)? Are you baffled by buffers, flummoxed by the files and confused by the commands? Do not fear, CLI Help is here!

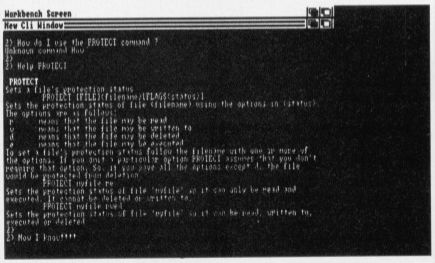
CLI Help is a handy little program that provides on-line help facilities for CLI users. Whether you're an experienced CLI-er or just starting out, CLI Help can provide you with instant information on any CLI command at the touch of a button (well, a couple of buttons to be honest).

Before you can use this incredibly useful utility, you must first install the program on your CLI disk. The file HELP! must be copied to the 'C' directory of your boot disk and the file HELPA.HELP must reside in the top level or 'root' directory of the same disk.

To use CLI Help, enter the CLI Help command, `HELP!` followed by the name of the command you require information on. For example, to obtain information on the DIR command, you would enter:

```
HELP! DIR
```

Due to the fact the CLI Help is CLI based and needs parameters to function correctly, the program cannot be run from our cover disk menu or from the Workbench. This program is aimed at those of you who have a certain amount of experience with the Amiga's CLI environment. Full instructions are available within the same drawer as the program.


Workbench Screen
New CLI Window
2> How do I use the PROTECT command ?
Unknown command How
2>
2> Help PROTECT
PROTECT
Sets a file's protection status
PROTECT [FILE]/[filename/[FLAGS{status}]
Sets the protection status of file <filename> using the options in {status}
The options are as follows:
r: means that the file may be read
w: means that the file may be written to
d: means that the file may be deleted
e: means that the file may be executed
To set a file's protection status follow the filename with one or more of
the options. If you don't specify an option PROTECT assumes that you don't
require that option. So, if you give all the options except 's' the file
could be protected from deletion
PROTECT myfile rwe
Sets the protection status of file 'myfile' so it can only be read and
executed. It cannot be deleted or written to.
PROTECT myfile rwed
Sets the protection status of file 'myfile' so it can be read, written to,
executed or deleted
2>
2> How I how****

▲ *CLI help offers Amiga users memory joggers*

HAVING TROUBLE WITH THE DISK?

We have done our best to check that the programs supplied on this month's disk are simple to use, error free and have no known viruses. However, we cannot answer telephone queries on using the software, and we do not accept liability for any consequences of using the programs.

If your *ST Amiga Format* disk is faulty – and out of 40,000 duplicated some are unfortunately bound to be – you should send it back for a free replacement to:

ST Amiga Format February Disk, DisCopy Labs, 20 Osyth Close, Brackmills, Northampton NN4 0DY.

AMIGA OWNERS: if your Amiga refuses to accept the disk, try using the DISKDOCTOR utility on your Commodore Workbench disk to rescue it before sending off for a replacement. We covered DISKDOCTOR fully on page 93 of Issue 1. Don't worry if every track gives you a 'hard error', this is the Amiga being unable to read the ST software on the disk.

HOW TO USE THIS DISK

The *ST Amiga Format* cover disk is a special format disk which both the ST and the Amiga can read. Even if you are a seasoned computer user, please read these instructions carefully or you could permanently damage your copy of it.

The first thing you must do is make a backup copy of the disk. Because of the special format, the normal disk-to-disk copying methods, as recommended in the Amiga and ST manuals, won't work. Instead you will need to format a blank disk and copy the files individually. Don't panic, this isn't at all difficult.

ON THE ST (assuming a single drive machine)

1. Take a blank disk and format it in the usual way.
2. With the blank disk still in the drive, double click on the A: drive icon to open up the (blank) contents window.
3. Now drag the icon for drive B: into the open window of disk A. This will copy all the files one by one off the master disk to your new disk. *Make sure that the master ST Amiga Format* disk is write protected (the sliding tab should be back so the hole is open) and put it in the disk drive when asked for disk B.
4. You will now be prompted at various times to insert disk A and disk B while copying takes place. There will be a lot of swapping to do on a single drive ST! Disk B should be the master disk, disk A your newly formatted copy.

If you want to cut down on disk swaps, you can use the Eternal RAM disk program provided on issue 5's disk as an intermediate step.

ON THE AMIGA (assuming a single drive A500)

1. Start your Amiga up with your normal Workbench boot disk.
2. Take a blank disk and initialize it in the usual way.
3. *Make sure that the master* ST Amiga Format *disk is write protected* and put it in the disk drive. Double-click on the disk icon that appears. Drag any icons you see in the contents window onto the 'RAM disk' icon.
4. When the disk activity light has gone out, put your newly formatted copy disk in the drive instead. Double-click on the RAM drive icon to open its window, and drag program icons from that onto the new disk icon. This copies the files one by one.

The programs may not all fit in the RAM drive at once on an A500 – do whatever will fit, then after step 3 delete them from the RAM disk by clicking once on each and, holding the right mouse button down, selecting discard from the Workbench menu. Repeat steps 2 and 3 for the rest of the icons.

USING THE PROGRAMS ON THE ST

When you turn the ST on and put your working copy of the disk in the drive, you will see a window opened with the contents of the disk displayed.

One of the icons is called CLICK_ME.PRG – just do what it says, double-click to run it. Up comes a list of the disk contents. Type the number of the program you want to run, and you are asked whether you want to read the disk help file or not.

You will now be asked whether you want to run the program or not. As an alternative to using CLICK_ME.PRG, if you know enough about GEM you can click directly on the icons for individual programs. These normally end .PRG with their documentation files having the same names but with .DOC file types. Always read the documentation before running the program.

ON THE AMIGA

Most of the programs on the cover disk are run from the Workbench, which must be loaded first from your normal start-up disk, as described in the Amiga manual. Once at the Workbench, put the ST Amiga Format disk in the drive and double-click on its icon to open it.

You should find on the disk an icon for a program called CLICK_ME, do exactly what it says and after a few seconds our cover disk menu program will have loaded. If you own a single drive Amiga then your machine will prompt you to swap disks a couple of times before the menu is loaded. Just follow the on-screen requesters and everything should load fine.

Most of the programs on the disk can be executed from CLICK_ME by selecting them from the menu and choosing either to view the program's documentation or load the program. If a program fails to load from this menu (this sometimes happens through shortage of memory on unexpanded systems), you can load it from the Workbench instead, by clicking on its icon.

To load a program from the Workbench, you must first Click open the drawer which contains it. For detailed comments from the program's author click on the .DOC file icon in the same folder; to run the program click on the main icon.

When you click on a documentation file, a new window is opened and the text is displayed a screenful at a time. Press any key to move from one screenful to the next, or click on the close gadget in the top left-hand corner of the window to cancel the display. The READ_ME icon gives you a brief summary of the disk's contents and how to use it.

DISK DOCUMENTATION

Many of the programs on *ST Amiga Format* disks are Public Domain. In such cases we've simply passed on their standard documentation files unchanged, as is required by the PD code of practice. Some of the phrasing is 'idiosyncratic', shall we say, so please don't blame us for misspellings!

WE WANT TO GIVE YOU MONEY!

f you've got any programs for either ST or Amiga which you think other readers would find useful, interesting or amusing, we'd like to know. Here's how to go about securing international fame for yourself:

1. Only send in programs on 3.5" disks; we cannot accept printed listings.

2. Make sure your disk is clearly labelled with your name and address and the program name(s), and is marked 'ST' or 'Amiga'.

3. Make sure there's a documentation file on the disk called README.

4. Enclose a clear covering note explaining what the program does, and if you possibly can please also send a printout of any on-disk documentation files. Remember your address and telephone number. Include a stamped return envelope for the disk if you want it back.

5. THIS IS IMPORTANT: there must be a signed statement that the program is yours and that you are prepared to assign publication rights to ST Amiga Format. Use the following wording:

The program/s (write the title here) is/are submitted for publication by* ST Amiga Format *magazine. It is my own work and has not been submitted for publication elsewhere.

Signed ...

If we accept your program, we will get in touch with you before publication to agree terms and payment rates. We will evaluate all submissions in a batch once a month, so please allow up to 40 days for return of your disks.

6. If you send us a disk with a virus on it, we reserve the right to send round the heavy mob in the small hours and do unspeakable things to your pet Capybara. Seriously, since we've already supplied Virus-killer programs (in Issue 1), do check your disks very carefully.

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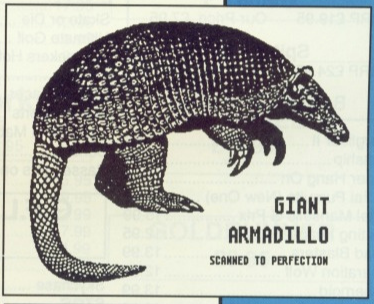

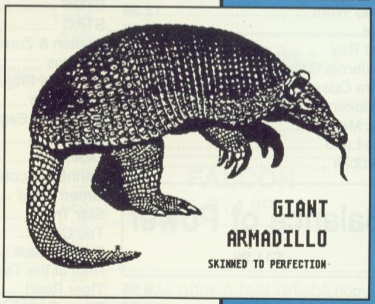

WHAT WE'VE DONE

Using our Cameron Handy Scanner, we've digitised a fascinating picture of our favourite edentate and 'enhanced' it in an art package with some appositely placed peripherals.

WHAT YOU DO

Simply study the two drawings reproduced on this page. You'll find that five subtle changes have been made to the second picture – when you think you've found them all, list them on a postcard or the back of a sealed envelope: for example, you might write "Has two heads" as one of them.

Finally, add to the postcard which machine you own, ST or Amiga, send it off to us at *Cameron Scanner Competition, ST Amiga Format, 4 Queen Street, Bath BA1 1EJ* and keep your fingers crossed. Easy really.

WHAT YOU WIN

The first two entries entry scooped from the editorial bucket on Tuesday 21st February – one for ST and one for Amiga – will win a complete Type 3 Cameron Handy Scanner system for their machine. Have a read of this month's review starting on page 24 to see what you'll get – not only a superb grey scale image scanner, but a handy set of 'optical character recognition' software to save you a lot of typing trouble. Each kit is worth £350 at retail prices.

WHAT YOU CAN ONLY JUST READ

1) All entries must be received by first post on Tuesday 21st February 1989.
2) The editor's decision is final, and he'll sulk if you argue with him.
3) Employees of Future Publishing and Cameron may not enter the competition.
4) Armadillos and other edentates may not enter, as they would have an unfair advantage in spotting the differences.

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SPEECH SYNTHESIZER

Do you feel lonely? Wouldn't you like an understanding voice to talk to you once in a while? ROBERT PENFOLD explains how to add a speech synthesizer to your ST – or indeed any computer.

AMIGA MIDI KIT

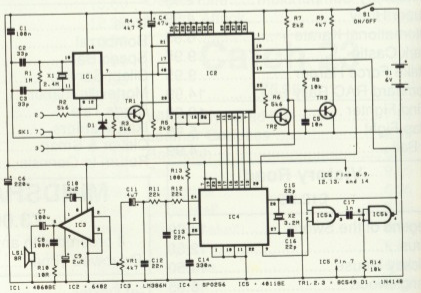
The Amiga MIDI Interface, our last do-it-yourself project, is still available from Magenta Electronics. It offers MIDI IN, THRU and three OUTs, all in an elegant case for for £19.95 Contact Magenta at the address for this month's kit, and get Format back issue 5 for construction details.

One thing the Amiga can boast which the ST lacks is a speech synthesizer – the ability to take a string of English text and speak it aloud. As it stands, on the ST it is just about possible to produce speech (as games like *Captain Blood* do by using digitised samples) but it needs a lot of expensive hardware if you are to capture your own sounds.

This add-on speech synthesiser for the ST gives it something close to capabilities of the Amiga. It may not always pronounce words just as you would like them (even allowing for the American accent!), but it is capable of remarkably good results given a bit of thought, and can handle any English word or sentence.

Speaking volumes

The ST Amiga Format speech synthesizer is a box which plugs into the serial interface (modem port) of the ST. You can then use a programming



■ *Figure 1: The circuit diagram, for the technically minded. IC4 is the speech chip, and IC3 is a small power amplifier that enables a miniature loudspeaker to be driven at reasonable volume.*

VOICE BREAKING

There can be little doubt that in terms of quality the best speech synthesisers are the ones which play back complete sentences of a digitally recorded voice. Unfortunately, apart from the expense such systems requires large amounts of memory even if only a few short sentences must be stored.

There are two common alternatives. One is to store a number of digitised common words in ROM and build sentences up from them, but the vocabulary is usually so limited that the results are less than convincing.

The second method is really an extension of this 'cut and paste' technique, but the digitised speech is only basic sounds such as "shhh" and "arrr". Provided there are enough of them, any desired words can be made up. You need to have some understanding of the basics of speech to get the best from this system, and although results are something short of hi-fi the simplicity and versatility of these speech units makes them an attractive proposition. The basic sounds are stored in ROM in the speech unit, and quite long sentences require no more than a short program plus a few dozen bytes of data storage at the computer.

language to send commands to the unit which will dutifully speak to you through its own speaker – it doesn't use the ST's own sound chip at all.

In fact, the speech synth will work with any computer which has a serial interface, and that includes the Amiga of course. (Imagine the possibilities using multitasking – you could get the Amiga to talk to itself, one voice through the inbuilt synthesizer, and one through the external box!)

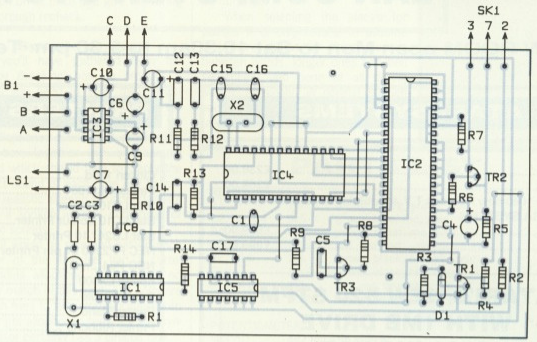
The speech box could have been designed to connect to the parallel or serial port of the ST – since many people will already have a printer connected to the Centronics, the serial port seems a better bet. The synth is powered from an internal battery as there is no convenient (and safe!) way of tapping power from the ST itself.

Building the unit

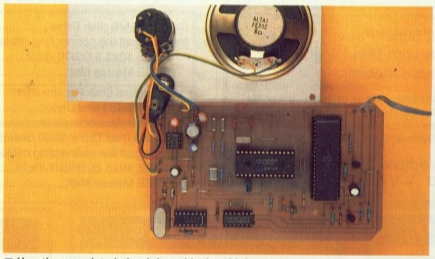
Details of the printed circuit board are shown in Fig. 2 – assuming you've bought the kit from Magenta Electronics (see the parts list elsewhere) all you have to do is identify the components, bend their leads to fit into the corresponding holes on the board and solder them in place.

A warning about the integrated circuits: apart from IC3 they all require anti-static handling precautions. This boils down to fitting integrated circuit sockets on the board first of all, and not plugging the ICs in until everything else is finished. These 'MOS' integrated circuits are usually supplied in some form of anti-static packaging (such as conductive foam or plastic tubes). Leave them in until it is time to fit them into their holders, and then handle them as little as possible. Obviously you should keep away from any sources of static electricity when fitting these devices.

The pins of integrated circuits are usually splayed out slightly, making them difficult to plug into their holders. Pressing the rows of pins against the top of a table to bend them in slightly can make them much easier to fit. Make sure all the pins are going into place before pushing them home – buckled pins can easily snap off as



■ *Figure 2: How the components fit onto the printed circuit board supplied with the kit. Refer to the Parts List later on for which code corresponds to which component. Push the component leads through the holes so that the wires poke out of the coppered side of the board, then solder and trim them.*



■ *How the completed circuit board looks with its connecting leads*

THE ALLOPHONES

Dec no.	Hex no.	Allophone	Sample Word	Dec no.	Hex no.	Allophone	Sample Word	Dec no.	Hex no.	Allophone	Sample Word
0	0	PA1 *	10ms pause	22	16	UW1	tO	44	2C	NG	rANk
1	1	PA2 *	30ms pause	23	17	AO *	tAUght	45	2D	LL	Love
2	2	PA3 *	50ms pause	24	18	AA *	pOt	46	2E	WW	Wood
3	3	PA4 *	100ms pause	25	19	YY2	YEt	47	2F	XR	Range
4	4	PA5 *	200ms pause	26	1A	AE *	pAt	48	30	WH	WHen
5	5	OY	tOY	27	1B	HH1	Hat	49	31	YY1	Yet
6	6	AY	trY	28	1C	BB	BUsy	50	32	CH	CHange
7	7	EH *	End	29	1D	TH *	THen	51	33	ER1	flR
8	8	KK3	Come	30	1E	UH *	tOOk	52	34	ER2	buRR
9	9	PP	Power	31	1F	UW2	bOOt	53	35	OW	tOW
10	A	JH	DodGe	32	20	AW	OUt	54	36	DH2	THey
11	B	NN1	siN	33	21	DD2	Down	55	37	SS *	beSt
12	C	IH *	pIt	34	22	GG3	pIG	56	38	NN2	Now
13	D	TT2	Top	35	23	VV	Vertical	57	39	HH2	How
14	E	RR1	Rate	36	24	EG1	GUest	58	3A	OR	bORe
15	F	AX *	sUcceed	37	25	SH	SHine	59	3B	AR	alARm
16	10	MM	Mine	38	26	ZH	aZure	60	3C	YR	reaR
17	11	TT1	porT	39	27	RR2	crane	61	3D	EG2	Get
18	12	DH1	THere	40	28	FF *	Find	62	3E	EL	paddLE
19	13	IY	tEA	41	29	KK2	sKy	63	3F	BB2	Bottle
20	14	EY	rAge	42	2A	KK1	Can				
21	15	DD1	shoulD	43	2B	ZZ	Zoo				

SLURRED SPEECH

The speech speed is controlled by a 3.2768 MHz crystal, X2. This is a readily available and cheap type which is intended for use in quartz clocks. The crystal frequency recommended by the speech chip manufacturer is actually 3.12MHz. The marginally-higher-than-recommended crystal frequency results in a slightly higher audio pitch and very minor speeding up of the speech output. Neither effect is great enough to be noticeable though.

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they are straightened out. Make sure all the integrated circuits are fitted the right way round, with the notches in the positions indicated in Fig. 2.

Orientation course

It doesn't matter which way round the crystals, resistors, and non-electrolytic capacitors are fitted, but the electrolytic capacitors and diode D1 must be fitted the right way round. In the case of the electrolytic capacitors '+' and/or '-' signs should be marked on the components to identify their leadouts. The transistors have preformed leadouts which should enable them to drop into place in the correct orientation easily.

Several link wires are needed, and trimmings from resistor/capacitor leadout wires may suffice for these. If not, some 22 s.w.g. tinned copper wire will be needed. Fit 1mm single-sided printed circuit pins to the board at the places where connections to SK1, VR1 and the other off-board components will eventually be made.

Miniature loudspeakers never seem to have any provision for panel mounting, so just glue LS1 in place. Any good quality general purpose adhesive should do, but try to avoid smearing any onto the diaphragm. The printed circuit board is mounted on the base panel of the case using bolts and spacers. VR1 and S1 are combined in a standard volume control and on/off switch.

There is a small amount of point-to-point wiring to add in order to finish the unit. This is mostly straightforward, but Figs 2 and 3 show how to get the wiring to VR1/S1 right. Fig. 4 shows pin numbering for the 25 way D socket which connects to the ST's 'modem' serial port. This shows the socket as viewed from the rear, ie. the side on which you make the soldered connections.

A supply voltage of about 5 to 6 volts is required, and this is provided by four HP7 size cells in a plastic holder. These holders have standard PP3 style connectors incidentally – do not use a 9 volt battery as this may damage IC2 and IC4, neither of which are particularly cheap.

The output signal is at 0 and +6 volts rather than the standard RS232C levels of –12 and +12 volts. However, the ST's serial input (like most others) will operate perfectly well with these reduced voltage levels provided a connecting cable of no more than a metre or two is used.

It is advisable to get the computer up and running before switching on the voice box, or there can be problems with spurious signals from the computer generating noises. Once the unit is switched on, with the volume pumped up it should be possible to hear a certain amount of background buzzing if you place an ear close to the loudspeaker. If not, switch off at once and give the wiring a thorough recheck.

Speak to me!

As you'll have gathered from the 'Voice Breaking' box, to produce a word you need to send the correct series of sounds, or allophones in the jargon, to the speech synth. A full list of allophones available is provided in the box, together with an example word which should help to clarify the exact sound of each. The key to getting realistic speech is understanding how a spoken word is composed of basic sounds.

It would be nice and easy if each letter of the alphabet had a corresponding allophone, but there is no easy match of this kind. Any software which tries to turn written English into the right allophones for a speech synthesiser certainly has a difficult task.

So what are the basic rules for selecting the best allophones? The most important one is to think as much as possible in terms of the way a word sounds, rather than how it looks in writing. This is fine for someone selecting allophones for themselves, but is beyond the scope of most computer programs!

Looking down the list of allophones you will notice that there are often two or three allophones for what, on the face of it, is just one sound. There are, for instance, three "g" sounds. The difference between similar allophones is mainly one of duration. Allophones "GG1" and "GG2" are relatively short at 80ms and 50ms respectively. These are normally used at the beginning of a word. The longer "GG3" allophone at 160ms is mainly used at the end of words. The allophones for use at the end of words, or in the middle of them, also tend to be softer. Those for use at the beginning of words are generally much sharper, with a high initial volume that rapidly subsides.

With most of the sounds it is not possible to effectively stretch them out by using the same allophone two or three times in succession. This is due to most of the sounds changing in volume quite significantly from their beginning to their end. Using several of them in succession gives a sort of echo effect! There are some exceptions though, and these are marked with a '*' in the list. In order to get a good sound it is often essential to use two or three of these sounds in succession. Note that 'FF', 'TH', and 'SS' allophones are normally only doubled-up when they are used at the beginning of a word.

Pause for thought

The inclusion of silent allophones makes it easy to insert the pauses that occur during speech. This is another aspect of the speech synthesis that needs to be given careful thought if really good results are to be obtained.

When selecting the places for pauses it is only natural to assume that there should be short silences between words, longer ones between sentences, and none at all during words. In reality, in normal speech you often run one word into the next, talking in what are really phrases

PARTS LIST

RESISTORS		
R1	1M	brown, black, green, gold
R2, R3, R6	5k6	green, blue, red, gold
R4, R9	4k7	yellow, violet, red, gold
R5, R7	2k2	red, red, red, gold
R8, R14	10k	brown, black, orange, gold
R10	10Ω	brown, black, black, gold
R11, R12	22k	red, red, orange, gold
R13	100k	brown, black, yellow, gold
POTENTIOMETER		
VR1/S1	4k7 log with switch	
CAPACITORS		
C1	100n ceramic	
C2, C3	33p polystyrene	
C4	47u 16V radial electrolytic	
C5	10n polyester	
C6	220u 10V radial electrolytic	
C7	100u 10V radial electrolytic	
C8	100n polyester	
C9, C10	2u2 50V radial electrolytic	
C11	4u7 50V radial electrolytic	
C12, C13	22n polyester	
C14	330n polyester	
C15, C16	22p ceramic plate	
C17	1n polyester	
SEMICONDUCTORS		
IC1	4060BE	
IC2	6402	
IC3	LM386N Amplifier for speaker	
IC4	SP0256 The speech chip itself	
IC5	4011BE	
D1	1N4148	
TR1,2,3	BC549	
MISCELLANEOUS		
SK1	25-way D connector and cover	
B1	4xHP7 batteries in plastic holder	
LS1	8Ω impedance 66mm diameter speaker	
X1	3.2768MHz miniature wire-ended crystal	
X2	2.4576MHz wire-ended crystal	
	Printed circuit board	
	Case about 165x116x76mm	
	Control knob	
	1 metre of 3 way cable	
	d.i.l. integrated circuit holders: 1 each of 8 pin, 14 pin, 16 pin, 28 pin, 40 pin	
	M3 nuts, bolts and spacers for PCB mounting	
	1mm diameter printed circuit pins	
	Solder	

GET KITTED OUT!

Ordering parts from electronics catalogues is a hassle, and if you haven't done it before you'll get rapidly lost. But don't worry: ST Amiga Format in conjunction with Magenta Electronics is offering a complete kit of parts for sale.

The kit costs £29.95, inclusive of a pre-drilled box complete with elegant lettering and logos as pictured on these pages. Send your orders to FORMAT SPEECH SYNTHESIZER OFFER, MAGENTA ELECTRONICS, 135 HUNTER STREET, BURTON-ON-TRENT, STAFFS DE14 2ST, or phone 0283 65435 with your credit card details.

Please allow 21 days for delivery.

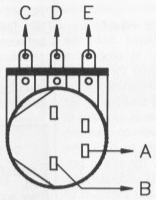
OPERATING SPEEDS

If you use the unit with a programming language that gives handshaking options, choose the no handshaking mode. This will often be the default mode. If handshaking has to be used, select hardware handshaking and connect the CTS and RTS terminals of the modem port (i.e. wire ``` is should ensure that the hardware does not interrupt the flow of data from the computer.

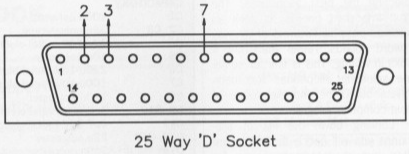
GET YOU GOING

If you find your speech synthesizer is being unnaturally shy – in other words it doesn't work – you'll be relieved to know that the kit suppliers Magenta Electronics are offering a get-you-going service.

Send your completed unit back to them with a £6 cheque to cover costs. Make sure it is properly padded, and address it to: *Speech Synthesizer Repairs, Magenta Electronics, 135 Hunter Street, Burton-on-Trent, Staffs DE14 2ST.* Allow a couple of weeks for return.



■ *Figure 3: Where the leads from the board (fig 2) connect to the On/Off – Volume switch.*



■ *Figure 4: Wiring the plug to go to the ST's serial port, as seen from the side you solder.*

rather than individual words. Perhaps more surprisingly, multi-syllable words often have short gaps between one syllable and the next. Some words have a natural flow and are pause-free while others do not trip off the tongue so easily. Think about how sentences are spoken, and not how they are written down.

As a general rule, pause 3 is used between words, and pause 4 or pause 5 are used between sentences. The two shortest pauses are occasionally used within words, and are primarily added before 'BB', 'DD', 'GG', and 'JH' sounds. Pause 3 can be used in a similar manner before 'PP', 'TT', 'KK', and 'CH' sounds.

Writing a speech program

This particular speech synthesizer uses a simple form of 'software handshaking' to communicate with the computer. Each time the speech box has processed one piece of data and is ready for the next byte it sends a dummy byte of data to the ST. Looking at things from the computer end of the system, after each byte is sent to the speech box a software loop has to provide a hold-off until it detects the 'ready' byte.

Set your ST's serial interface to 9600 baud, with eight data bits, no parity, and one stop bit. You may be able to set all this from the programming language, or from the standard ST Control Panel desk accessory. These settings are the default on the ST anyway.

No particularly complex software is needed in order to drive the unit. The accompanying ST BASIC listing gets the unit to say "10, 9, 8 ,7, 6, 5, 4, 3, 2, 1.....lift off".

The first allophone value is read from the DATA statements, and then the program goes into a loop. This reads an allophone value from the data statements, waits for a value of 255 to be received from the speech synthesiser to indicate it is ready to receive data, and then outputs the allophone value to the serial port. Note that the first allophone is sent to the speech synthesiser before entering the loop – failing to do this will result in the system hanging up while it waits for a 255 code from the synthesiser that will never be sent. The loop continues until a value of 64 is encountered in the DATA statement – an impossible allophone value. This final value is sent to the speech synthesiser, but with only the bottom six bits being read by the speech chip it is effectively an allophone number of 0 rather than 64. This is a 'pause', which ensures that the output from the unit is properly terminated. Many of the allophones continue to be spoken until a new instruction is received, and without a final pause allophone the output from the unit may not end properly.

After the final loop the last transmitted byte from the speech synthesiser read into 'dummy' so that it is not left in the buffer. Leaving this byte unread would cause a malfunction at the beginning of any subsequent speech output routine. You really ought to ensure that the serial input buffer is cleared before attempting to communicate with the synth, but ST BASIC has no simple way of doing this. Other languages often do.

When selecting the allophones for your own sentences, remember the basic rules detailed previously. Look at the allophones used in the example, and try improving on them. Note the use of doubled-up sounds in places, the short pause added ahead of the 'TT' sound in 'lift', and the lack of any pause between 'lift' and 'off' (which tend to be spoken as if they were a single word). The obvious allophones do not always give the best results, and it is often the short words that give the greatest difficulty. The word 'one' proved difficult, and the obvious allophones (46, 15, and 11) 'W', 'U', 'N' don't sound at all right. An 'AU' sound added after the 'W' allophone seems to improve matters, but perhaps you can do better?

THE SAMPLE

Type this listing into ST BASIC and run it to hear a stirring message. If it doesn't work, check your serial interface is set to 9600 baud, 8 bits, 1 stop bit and no parity before suspecting a hardware fault.

```
10 read allophone
20 out 1,allophone
30 read allophone
40 if inp(1) = 255 then out 1,allophone
50 if allophone < 64 then goto 30
60 dummy = inp(1)
70 data 13,7,7,11,4,11,24,6,11,4,20,2,13,4,55,55,7,7,35,12,11,4
80 data 55,55,12,12,2,41,55,4,40,40,6,35,4,40,40,58,4,29,29,51,
   19,4
90 data 13,31,4,46,23,15,11,4,4,4,4,4,45,12,12,40,2,17,24,24,
   35,64
```

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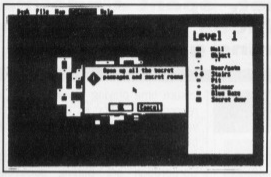

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NEWS

SCREEN PLAY

With the remains of the Christmas cake festering in a tin at home and all the best of Santa's games now beginning to look boring, what better than a glance at all the new releases? MARK HIGHAM, games reviewer extraordinaire and resident Chuckie Egg addict, spent Christmas locked up in the Format offices to provide you with a list of the up and coming games.

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PREVIEWS

DRAGON'S LAIR

READYSOFT/ENTERTAINMENT INTERNATIONAL ■ Amiga

£44.95 ■ End of January

This mega laserdisc game which astounded arcade goers now careers onto the Amiga. *Dragon's Lair* will come on *six* disks (supposedly justifying the enormous price-tag) and offers 130Mb of graphics and sound. You control Dirk the Daring as he wanders through the castle's maze-like corridors in search of the fair Princess Daphne (no relation to a recently deceased member of the neighbours' cast). She is being held in the evil clutches of Singe the Dragon and you have to rescue her from a bevy of beasties.

ST owners may remember the rather gimmicky version for their machines which needed a laserdisc player to operate, but the Amiga version looks set to be very much better. The game can only be run on a 1Mb Amiga but its release is likely to prompt many people to upgrade.

SILKWORM

RANDOM ACCESS/SALES CURVE ■ ST & Amiga

£19.95 ■ End of March

Loads and loads of levels in this Tecmo coin-op conversion. Silkworm is a horizontally scrolling game in which you have the choice of playing from either a chopper or a land-based jeep. Both of these have equal firepower, but with a two player option you can make use of the different features of both. The objective is (you guessed) to blast away the fleets of missile launchers, tanks and parachutes against an impressive backdrop of smoothly-scrolled desert landscapes. Great fun for the shoot-em-up addict.

INTERPHASE

IMAGEWORKS/MIRRORSOFT ■ ST & Amiga

Price TBA ■ Due February

Interphase is definitely not your average game. It's set in an unemployed future where people spend their leisure time playing 'DreamTracks', a recording of fantasies and pleasures you plug into for a vicarious thrill. A bit like BT's Chatline really.

Unfortunately, the DreamTracks Corporation are putting subliminal messages in their fantasies to control people. It's your job to locate the security circuits of the mainframe and find and retrieve the last DreamTrack.

Interphase promises the fastest and smoothest 3D filled vector graphics yet seen, featuring intriguing logic puzzles and the most dazzling flight and fight sequences ever. That's a lot to live up to.

GEMINI WING

IMAGITEC/SALES CURVE ■ ST & Amiga

Price TBA ■ End of March

This vertical-scrolling shoot-em-up is described as 'organic' game. Gemini Wing leads you through seven different levels of organic backgrounds filled with lots of weird aliens such as mutating butterflies, flying Beetles and giant Salmon.

With weapons ominously named the Windscreen Wiper of Death, homing missiles and a firewall which

SHOCK BOX

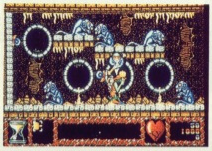
When the door of Hell opens wide and a party of ugly gargoyles emerge to breathe their foul smelling breath over the world you just know that Anco has popped up with another release. Maria Whittaker returned to the strip poker scene in their latest game, but she was nothing compared to the majority of the swine arriving behind the pearls in the *Format* office this month.

Among the 30 ST releases and 22 Amiga games was *Arkanoid – Revenge of Doh* which has finally appeared on the Amiga. *Double Dragon* from Virgin offered the resistible opportunity to watch two women engaged in street-fighting – and *Spitting Image* was another street-fighting game from Domark but instead of two luscious lovelies fighting each other you could glory in watching Mrs. Thatcher knee the Pope in his most holy areas – great fun for all of ten minutes. Ocean's much-awaited *Operation Wolf* was not only slow but boring. It survived on the ST for about a quarter of an hour before it was switched off in favour of more fun with a database. *Victory Road*, also from Ocean didn't even last that long; poor graphics and a worse plot tested our endurance to the limit.

On the better side there was the brilliant *Super-Hang On* for the Amiga – see the ST review in issue 3. Microprose's *The President is Missing* was another good release but didn't make the grade in the end. On the adventure game side we got hold of a copy of Microdeal's *The Grail Adventure* but catch the Talespin review on p67 if you want to find out more about this one. The much-promised *Ultima 5* still hasn't appeared but we're trying – honest!

Finally, *Lords of the Rising Sun* is getting closer – we received a demo which looks as if it presages a really great game. Watch this space.

spreads out to the sides of the screen then rolls up and torches everything, it's going to be hectic.



▲ *At last – VERMINATOR out soon*

VERMINATOR

RAINBIRD/TELECOMSOFT ■ ST & Amiga
£24.95 ■ Early February

When did you first see an advert for Verminator? Six months or more it may have been, but the game looks like it was worth the wait. Set inside the trunk of an ancient oak tree incorporating over 250 colourful locations from top to bottom, you have been employed by the Tree Council to rid the oak of spurious vermin. This is your chance to make some decent dough – failing which you might risk

▲ *FINAL COMMAND*

borrowing from the Mob.

FINAL COMMAND

UBI SOFT/ELEC. ARTS ■ ST
£19.95 ■ End of February

The last words uttered by Hyperstation Alpha were: "We are under attack." Being a pretty cool guy and a space adventurer as well you've been selected to go for mission impossible. This action-packed adventure will lead you to the limits of space as you communicate with friends and foes in your quest for information. With intergalactic spies, bounty hunters and con-men at your heels you'll need lots of skill and intelligence to discover what happened to Hyperstation Alpha.

DANDY

GRANDSLAM ■ ST & Amiga
£19.95 ■ End of Feb/Early March

Grandslam have snapped up the rights to the Dandy comic adventures – replete with Brass Neck, Desperate Dan and his cow pies, and Korky the Cat. Brass Neck is employed in a strange cake factory briefed with the objective to bake as many cakes as possible. But with overflowing dough and conveyor belts that break down every time Brass Neck tries to put a cherry on the cake, the task in hand

▲ *Can you bear the challenge of*

soon becomes very tricky.

TRAINED ASSASSIN

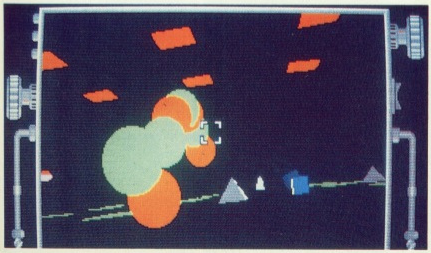
DMS SOFTWARE ■ ST & Amiga
£24.95 ■ Beginning of February

The promise of super-smooth movement and animation should combine to turn this shoot-em-up into a game of true arcade quality. With five levels of action featuring brilliantly animated monsters and pick-up enhancements for your ship, you'll need to defeat wave upon wave of ugly aliens as you take a trip through twisting tunnels. At the end of each level you'll need to blast away the largest monster you ever did see.

SWORD OF SODAN

DISCOVERY/GAINSTAR ■ Amiga
£24.95 ■ February

Massive sprites are moved around the screen at super-fast speeds in this game already seen in the US. You move through different levels incorporating parallax scrolling and a range of enemies which can only be defeated by wielding your sword and making sure they get to know who's in charge. Sampled sound effects and great graphics make it a game you'll want to add to your collection.



▲ *Can you stay awake for INTERPHASE*

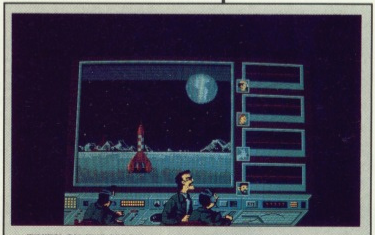
▲ *Catch DRAGON'S LAIR on the Amiga*

▲ *The sophisticated scenes of SWORD OF SODAN.*

TINTIN ON THE MOON

INFOGRAMES ■ ST & Amiga
£19.95 ■ Early February

Tintin and his fluffy white buddy, Snowy, climb into their red and white space-ship and set off to the moon. Being in control of their destiny, you have to pilot the ship through meteor storms, survive attack by outer-space aliens and land the ship somewhere in the deep craters of the moon. But you're problems don't end there. You'll need to overcome weightlessness and deal with Captain Haddock, Professor Calculus and the bumbling



▲ *TINTIN ON THE MOON*

REVIEW

PURPLE SATURN DAY

ERE/INFOGRAMES

ST – Reviewed. Mouse, Joystick. £24.95

Amiga – Out by the time you read this. £24.95

When it comes down to it, the human-race is a pretty pathetic bunch of yobs. But it's only when the odd superhero wanders into the Universe that we really start feeling incompetent. *Purple Saturn Day* is Infogrames' follow up to the mind-blowing *Captain Blood*, and offers mere mortals the chance to cast aside inferiority complexes and give a thorough drubbing to all our ugly alien neighbours. They might all have faces strongly resembling a two-day old trifle, but they're skillful enough to make daunting opponents.

▲ *The idea is to fly through Saturn's rings taking a not-very-scenic tour around the planet.*

▲ *Flying right of the red markers and left of the yellow ones soon tots up the old score.*

AIM

One day a year the skies of Saturn turn purple and the inhabitants of the neighbouring planets come together for the galactic Olympiad. And believe me, they're almost as ugly as the Arizonan armadillo – and that's ugly! *(what do you know – Ed.)* With four challenges designed to test your skills of speed, strategy and endurance you're going to be taxed to your limit.

You have the option of training or going for the full challenge of the competition. Training allows you to play the four games in any order and as often as you like. The competition offers 16 opponents and four games to complete. It's unlikely that you'll ever win the three races of each event – preliminary, semi-final and final – but if you do then the winner is treated to a kiss from a luscious black beauty strongly reminiscent of a horse. This must be a good deal more powerful than a cruddy old gold medal since strange offspring are the result.

THE CHALLENGES

RING-PURSUIT

You'll end up with scorch marks on the mouse mat if you're going to survive this challenge. The objective is to fly a slalom course around Saturn's asteroid rings avoiding collision with a set of markers. So long as you're ahead of your opponent you can build up the old score by moving right of the red markers and left of the yellow ones. This gets pretty tricky since you don't realise that the markers are looming until they clobber you, but a map in the corner of the screen gives you some idea of what's on its way. Step the wrong side of the markers and bonus points are awarded to your opponent.

TRONIC SLIDER

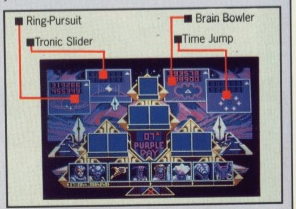
Gathering eggs was addictive in *Chuckie Egg*, but Purple Saturn Day takes it into the future – minus the Salmonella. You're in a race against the clock to slide around the floor picking up energy globules. A super-fast energy ball races around the screen, and by firing at it you can release the power that it holds. The ball will then reform and race off somewhere else while you have to go back and pick up the glowing orange balls left behind. If you don't get back in time your opponent cleans up instead.

BRAIN BOWLER

Fancy a spot of brain surgery to lighten the long winter evenings? With two sides of a brain currently not functioning (sounds like the American election, doesn't it?), your task is to get your half working again by connecting all the chips together and ensuring that the moving pulse has a free path to the centre of the brain. You need to collect bolts of energy and fire them at the chips in order to join links up. Your vindictive opponent makes this no easy task when he wanders across to your playing area and wipes out all your hard work.

TIME JUMP

Jumping into the future is the idea behind this game – don't expect to meet your sister as she enjoys her 80th birthday though. Hold down the fire-button to gather energy and then release it to jump forward in time. This produces a cluster of sparks which you have to shoot. You go through this process three times as you wind up the temporal spring, after which you shoot through the seven stars at the end of the galaxy. Hold on to your toupées or the mind-boggling speed will send you straight into a cosmic junkyard.



▲ *Select the different games – the ugly bunch are your opponents.*

▲ *A red chip can be taken out by your opposing half but once the pulse has changed it to green then you can relax.*

▲ *Collecting energy is like sticking your finger in the live end of a computer lead – you glow blue.until you fire the pulse.*

GRAPHICS AND SOUND

All the games except the Brain-Bowler provide a view out of the front window of your vehicle. This has the effect of really involving you in the gameplay even though it often makes manoeuvring considerably more difficult.

Whereas Captain Blood had its entire graphics sequences bathed in a blue rinse, its successor has gone for a pukey purple. The graphics effects in Purple Saturn Day are strong enough to keep you playing for hours. The animation in the Tronic Slider game is kept impressively smooth, which is no mean feat considering the size of the giant purple monoliths being moved around. Zapping the darting blue sparks in the Time-Jump game could have been improved by a faster response to the fire button, or even an auto-repeat on the joystick.

▲ *So this is the winner's prize, is it? Looks good to me.*

Collision sequences are greeted with an effective screen wobble and sound effects likely to have you wondering if somebody has just pulled the legs out from under your monitor. Other sound sequences have been as well considered as those in the now legendary Captain Blood.

▲ *It's up to you resuscitate this brain-dead zombie. Make use of your grey matter to re-direct all the pulses to the centre of the brain and win . Don't expect your opponent to stick to his side – when the chips are down he'll come along and undo all your hard work. Aliens – pah!*

CONCLUSION

Purple Saturn Day is a brilliant game with something for everybody. The four challenges are designed to appeal to the widest possible audience, so you're certain to find something worth playing – unless your idea of a good time is train-spotting on Betelgeuse station. From the strategies of Brain-bowler to the traditional shoot-em-up of the Time Jump, you'll be firmly cemented to your seat.

Purple Saturn Day is arguably the best release of '88 for the 16-bit scene, and is certainly a formidable challenge to the games of '89.

still graphics
0 1 2 3 4 5

moving graphics
0 1 2 3 4 5

soundtrack
0 1 2 3 4 5

lasting interest
0 1 2 3 4 5

overall 98%

▲ *Pilot a scooter on000 an orbital game area sounds like a great idea but you have to run around collecting fragments of pure energy which can be an exhausting*

▲ *This guy doesn't look too friendly. Get on the wrong edge of him and he'll use his tronic slider to knock off your energy bolts.*

▲ *Holy smoke! This thing's the energy ball. Blast it with your lasers and it'll drop energy fragments which you can go back and collect.*

▲ *Avoid the purple monoliths – not only do they upset your progress but they don't do much for your stomach.*

▲ *The Time Jump. Flex the spring and make way for a blast to the future. When the sparks appear you'll need to show 'em that you're made of sterner stuff.*

REVIEW

BAAL

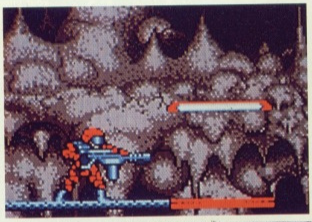
PSYCLAPSE/PSYGNOSIS

FORMAT GOLD

ST – Joystick. Reviewed. £19.95

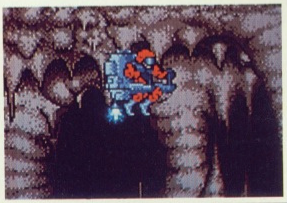
Amiga – Out by the time you read this. £19.95

Archaeology is a pretty weird way of earning a living at the very best of times but when you're dealing with a strange character rejoicing in the name of Baal you know things are going to get creepier and creepier. Baal is the follow-up to the hugely popular Menace but is it any good? Exploring the underground lair of some guy with serious body-odour and a fetish for walking off with your four lives is the order of the day.



▲ *This weird-looking platform gives you access to the rocket-pack and provides a painless way to do a tour of the landscape.*

▲ *The rocket-pack might do a great job of moving you around the screen but you need to find another telephone box for landing, so it's Home James.*



▲ *Landing on one of these platforms is the only way to lose the rocket, short of crashing. a painless way to do a tour of the landscape.*

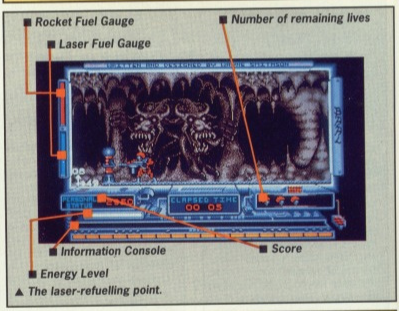
▲ *This ugly chap is one of your enemies. Thankfully you're armed with the magic of laser-power.*

AIM

The evil Baal has threatened to take over the world with his army of the undead. Now he's got a bit of hassle trying to achieve his task because he needs to get hold of a top secret war machine if he's going to get anywhere. This is where you come into the story. The only way to put an end to Baal's huffing and puffing is to find the thing before he gets his grubby hands on it. Easy you say? You ain't seen nothin' yet.

Some unfriendly chap has gone and split the war machine into five different parts which have been scattered across Baal's stench-filled lair. You've now got to get hold of these separate pieces to win the game.

As you've probably guessed by this point, the task in hand is not really as easy as following one of Mrs. Beaton's recipes for jugged octopus. With hundreds of different creatures touring the terrain, each armed with some sort of weapon unlikely to do too much for your state of health, the mission is no easy one. You're going to have to survive all kinds of ugly creatures to collect the yellow flashing war machine pieces scattered across Baal's cavern. With three separate domains, two of which are bordering on the size of our galaxy, you know you've certainly got your work cut out for you.



▲ *The laser-refuelling point.*

STRATEGY

Locating different parts of the war-machine is a tricky task. The Baal domain is arranged in the form of a multi-level maze in the same vein as *Obliterator*, with one level after another of weird monsters and electrifying force-fields. Unfortunately the monsters are pretty resilient and soak up a lot of firepower before dropping – very much like Edwina Currie. Since they have this reckless desire to spit missiles at you it's important to sort them out quickly.

The force-fields are less easily dealt with. You need to locate the generators scattered around the maze of floors and ladders and fire at them until they eventually erupt into flames. Each force-field has a corresponding generator at some other point in the maze and by destroying this generator you can switch off the field. At certain points in the game these force-fields take up the entire length of the maze making it impossible to pass until you have destroyed the generator. Weapon cartridges are scattered around the maze, and by collecting them as you go you can increase your firepower. Rocket refuelling pods, usually found on the opposite side of an active force-field, update your rocket-pack. This is essential if you're going to roam very far.

At the start, the rocket is on a red launch-pad. A box labelled 'Telephone out of order' descends over your head and when it lifts again you find that you've been miraculously equipped with a jet-pack. You can then fly all over the screen but there are only two ways of landing again. The first is to set down your hero on another red launch pad or, not quite so usefully, you can wait for your fuel to run out and die. Fuel vanishes extremely quickly when you're flying around so you're unlikely to get very far if you don't have a full back-pack.

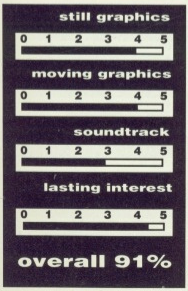
▲ *No, this isn't a scene from Tarzan. This little Rhino fellow is about as friendly as the rest of the guys down here.*

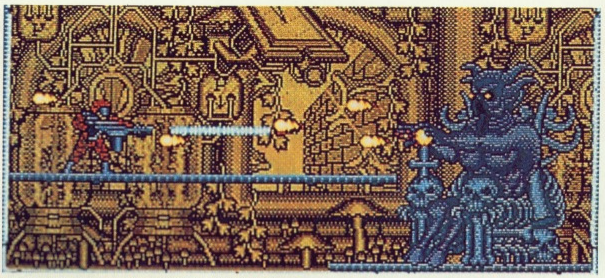
▲ *This beast has the manners of your Aunty Mildred and is probably about as friendly!*

▲ *This ominous strip of blue-light is the force-field. Beware – it can't be switched off just by waving your lasers at it.*

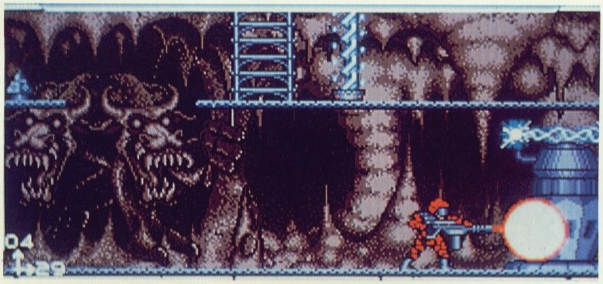
CONCLUSION

If you liked Menace then you're sure to love Baal. Its multitude of levels create a maze of problems. Monsters, force-fields and war machine parts stay in the same place with each game so coming back again and again finding ways to tackle each obstacle is what keeps it addictive. Baal is the sort of game likely to have you coming back for more.... and more. Each time you turn off the machine you know that there's something you still haven't managed to complete. The different levels offer challenges which will keep you hooked for months.

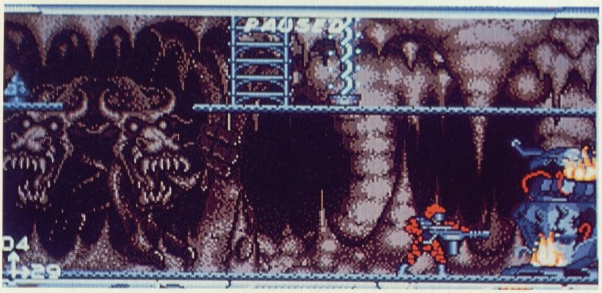




▲ *Venturing into the inner sanctum to confront Baal.*



▲ *It takes a lot of firepower to zap this one, but it's got to be done if you're going to disable the force-field. The generator disappears in clouds of fireballs and the field has been disabled.*



▲ *Well that wasn't too hard. At least it can't hit back.*

GRAPHICS AND SOUND

The graphics in this game are remarkably similar to its predecessor, *Menace*, definitely one of the major releases of last year. The monsters are brilliantly animated with weird bats boasting mouthfuls of hungry missiles which they aren't too reticent to spit out. With lots of other marauding animated creatures struggling against you, everything quickly becomes pretty hectic.

On-screen colours are not as colourful as those which were used in Menace but the Amiga version looks certain to remedy this fault. The different levels, accessible via a well-hidden transporter, offer gameplay against yellow or green backdrops. These have been as well-drawn as the first screen (which is where you'll probably spend the majority of your time). Explosion effects might not look entirely realistic but they certainly convey the right idea. It's when you've knocked out the generators and come back to them later on to find that they're still smouldering that you realise the whole game has been painstakingly designed.

Sound effects are not exactly mind-blowing, with simple explosion sounds and sparse effects scattered elsewhere. There's a really annoying crunch, similar to walking on top of a field of Cornflakes, erupting with each footstep your character takes.

REVIEW

GALDREGON'S DOMAIN

PANDORA

Amiga – Mouse. Reviewed. £19.99 | **ST – Out soon**

Once upon a time – in the deepest, darkest depths of the Lands of Mezron – there was this wizard guy wandering around with the weird name of Azazael. Old Az belonged to an elite occult movement and generally did evil things. His wrong-doings didn't make him a happy man though.

GAMEPLAY

Az is searching. Searching for the five special gems of Zator. It's up to you to get hold of the gems before him. These little gems aren't like the diamante earrings in your ma's jewel box; they actually do things like giving you special powers.

This might seem like a fairly easy task – after all, it's *only* five sparkly things. Unfortunately there's a twist to the tale: the gems are spread across 2500 different locations. The problems don't stop there. You see, there are also a range of incredibly ugly beasts who've taken it upon themselves to guard the gems. This would be fine if they made some attempt at being friendly, but do they? Do they hell! If you're going to get hold of the precious gems then you'll need to make lots of stealthy moves and do some quick thinking.

Help can be attained by popping down to the local tavern where you can communicate with the natives. The friendly chaps will give you information on the bad guys and clues as to where the gems are hidden. But beware, these guys have the morals of a skunk – and smell just as badly. If you're not careful they'll make moves to destroy you.

▲ *There are no blank walls in this game.*

▲ *Inside the domain. Select which spell you want to use and try and wipe out this ugly creature.*

GRAPHICS AND SOUND

The graphics set the game aside from its forefathers. Brilliant detail can be found in every backdrop, and the characters look menacing enough to have you quivering in your boots. One of Domain's best features is that you'll never come up against a grey wall – every single screen employs a wide range of colours and detail.

The sound effects have not been forgotten either: digitised sound effects accompany each location and a range of grunts and groans fill the air during combat. You begin to feel involved in the action. Switch off the lights and turn up the volume; you'll soon forget that you have to be at work the next day.

INTERACTION

Communication with this sort of game is always dubious. Ideally you could sit in front of your monitor and chat verbally to all the different characters. Galdregon's Domain doesn't offer this, but the range of options available are extensive.

Along the bottom of the screen is a box which gives you an extensive choice of options for each situation. By pointing the mouse onto one of these and clicking you can select the feature. To the side of these are icons used to provide access to all sorts of spells and fighting options.

CONCLUSION

Galdregon's Domain is similar to the now infamous *Dungeon Master*, but is set aside from the rest by its great graphics and atmospheric sound. You'll be wandering the territory for ages. And with a Galdregon II promised, you just know what you'll be doing every night for the next decade. It's a great game and well worth the challenge. You'll be hearing a lot more about Galdregon's Domain from now on.

still graphics 0 1 2 3 4 5

interaction 0 1 2 3 4 5

soundtrack 0 1 2 3 4 5

lasting interest 0 1 2 3 4 5

overall 87%

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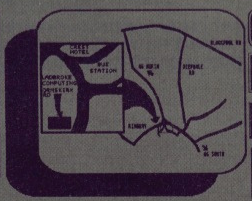

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GAME BUSTERS

TIPS

When the foot steps sound so very close to you; when you look around and they're all after you; where ya gonna go? Gamebusters! Ya don't get egg on your face here, matey.

ARKANOID II

ST

While Arkanoid is loading press down the right hand mouse button and keep tapping the left button. Stop hitting the left button when the program loads. You will see a picture advertising Robocop.

Neil Price
Ashington

TEST DRIVE

ST

If you fancy a high score without actually having to play the game, simply carry out the following steps:

- Load *1st Word* or some other WP and insert game disk B
- Set the directory to `*.*`
- Open the highscores file and edit
- Save the file once you've finished

Note that the high score shouldn't exceed 99,999 and the name must be 15 characters or less. If you want to change the car for a particular score simply use any of these codes (must be in lower case): p911t – Porsche 911 Turbo; vette – Corvette; lotus – Turbo Esprit; rossa – Ferrari Testerossa; counta – Lambourgini Contach.

Stuart Duncanson
Penparcau, Aberystwyth

INTERCEPTOR

Amiga

Following is a listing that, when run, lets you choose which mission to take part in. Load Amiga BASIC, type in the listing below, save the listing to a blank disk, run the program and insert the log disk when requested. Run Interceptor and select option six on the menu for selectable missions.

```
10 PRINT TAB(10) "INTER-
CEPTOR CHEAT."
20 PRINT: PRINT "INSERT
LOG DISK IN DF0:"
30 PRINT "AND PRESS ANY
KEY..."
40 WHILE A$=""
50 A$=INKEY$
50 WEND
60 PRINT: PRINT "PLEASE
WAIT..."
70 OPEN "R", #1,"DFO:CON-
FIG",1
80 FIELD #1,1 AS B$
90 LSET B$=CHR$(1)
100 PUT #1,2
110 FOR N=22 TO 27
120 PUT #1,N
130 NEXT N
140 CLOSE #1
150 PRINT:PRINT "FINISHED"
```

Darren Yeates
Worthing

If you are getting bored flying around and shooting at things, you might be pleased to know that the flight simulator makes a very palatable ground car simulator. If you don't start off on the aircraft carrier, that is.

Just don't take off. Make sure you avoid the sea and the darker coloured grassy areas (as that is swamp land and you get stuck). When you go over the bridge you'll find out that it is best to fly...

Andrew Burns
Manchester

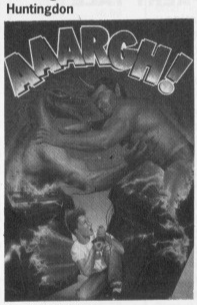
GAUNTLET II

ST

Providing you have the original Gauntlet, you can get up to some great trickery. Load Gauntlet II as usual, choose players and start the game. Let all the players die. Place the Gauntlet I data disk in the drive and start a new game with the same characters. The screen you start on will look a weird, but it will be full of magic potions.

There is one problem: you have to wait for the walls to turn into exits before you can leave the room. Remember to replace the Gauntlet II disk before exiting.

Carl Wignall
Huntingdon



AAARGH

Amiga

At the start of each screen you'll find various different buildings. Blow fire over them and then hit them; this will make them fall down a lot faster. When you burn or knock down a house you get to fight an egg; at the beginning of the fight make sure you put your finger on the fire button first and pull the joystick towards the opponent.

Carl Ferns
Bebington

CARRIER COMMAND

Amiga

Start an action game and pause the game straight away. Type in THE BEST IS YET TO BE (including spaces). 'Cheat mode active' will appear. Press + on the numeric keypad to protect mantas and AAV's from enemy missiles.

To complete the game with this cheat mode, set you carrier straight to Storm (south west of Thermopylae). On the way arm all mantas and set their individual courses so that you cover all sides of the island. To speed to Storm hold down 7 on the numeric keypad. On arrival, just outside Storm, reverse your carrier so there is 'no island in range' reading. If you've been quick enough, you'll be in position before 'Isolus is now an enemy island' appears. Restart if it has already appeared. Press 7 until the message pops up (you'll hear a ping). Select the message screen and hold down 7; after a minute you'll hear a second ping. Let go of the 7 key. The message 'Storm is being attacked' will appear. Launch all mantas at full speed to their preset destinations when this occurs. Take manual control of manta one and circle the island. You should see the enemy carrier; fly very low and into the carrier (the + key will protect you), but not into the sea.

You should destroy the carrier after two seconds contact. After five seconds you will be asked whether to continue or not. If you select no, you'll see the congratulations screen.

Pressing + or – on the main menu cycles through all game objects.

Andrew Reader
Maidstone, Kent

Instead of re-inforcing your supply lines go straight for the enemies home island, Nemesis, as it freezes the enemy supply line and disables the enemy carrier.

Scott Hutchings
Bishops Stortford

ST DISK CHEAT BONANZA

Lots and lots of them this month:

ELITE.TOS for, naturally enough, Elite. Lee Derybshire's hack provides you with an indestructible ship. Simply run the program and enter the original Elite disk when requested.
NEBULUS.TOS – another of Lee's hacks. This one provides you with infinite Pogos in the game Nebulus. Simply insert the game disk when asked.

The next four cheats are provided by prolific pokester Chris Kingsley and only work with the games that form part of the Autumn 520ST-FM Super Pack.
ICECHEAT.TOS – Ice Palace.
THRSTCHT.TOS – Thrust.
THUNDCHT.TOS – Thundercats.
ZYNCHEAT.TOS – Zynaps.

These pokes only work in low resolution. Make sure you insert the original, write-protected, game disk when requested.

GRAIL QUEST

ST

The complete solution to Microdeal's menu-based adventure:

On the first screen there is a bag of gold hidden in the bushes – don't pick this up yet. Use magic on the dragon on the next screen, but spare it's life. Go to the castle and kill the goblin at the entrance. When inside the castle, sleep on the street for three nights. When the man crawls up to you, on the third night, give him some of the cure found in the bottle in the window at the top left hand corner of the screen. Go back to the forest and give Billot the gold from the bush and return to the castle. Leave Billot at the inn while you sleep in the street. Return to the forest. When you meet a hooded man return to his house with him and cure his mother. Return to the castle and go to the upper level. Use magic on the bandit, but spare his life. You will then be transported to the world of essences where you must find the Grail. In the forest there is a man crawling on the ground, cure him and then go west to a pit in the ground Enter the pit and approach the light – you will complete the game.

Paul Spencerley
Crawley Down, Sussex

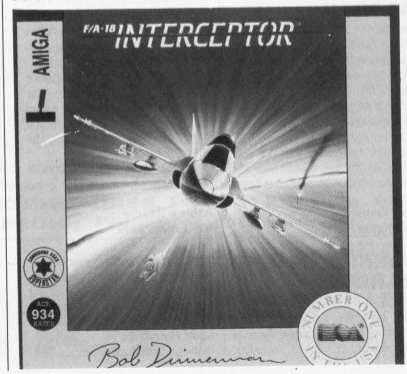
FAERY TALE

Amiga

One of the hardest things to overcome when fist starting the game is how to avoid dying. Here's what to do.

Make the crystal palace on the Isle of Sorcery your prime target with the first character, Julian. When you confront the good witch, click on ask. She will give you a gold statue and a clue. Now keep clicking on ask: your luck (or lives) will rise from 20 up to 65. This makes you impossible to kill. You can always return to the same spot and do the same if your lives run low.

Walter Lane
St Ninians, Stirling



ROCKET RANGER

Amiga

Don't bother wasting valuable game time trying to rescue the professor; you will always be too late and it wastes valuable Lunarium. Instead use the agents to find rocket factories and uranium depots.

Scott Hutchings
Bishops Stortford, Herts

CHRONO QUEST

ST & Amiga

The solution to the first level...

You need to pick up punch cards to get to further levels. Go upstairs and examine the bottom of the statue – not the pillar. Examine the corner of the carpet. Open the chest of drawers and get any items. Drop the key that you used to do this. Go through the north east door. Examine the gap between the two cushions. Examine the gap under the bed. Examine the small cabinet nearest to the control panel and get the item in the drawer. Now go out and down the stairs. Go west and get the round item on the book shelf. Go east and put the object on top of the left pillar. Go east and then north west into the kitchen. Find the safe and use the piece of paper on it.

Get the lighter. Get the bottle and empty the wine from it. Go to the start position of the game and go through the door. Stop! Ignite the lighter and go up. Turn the lighter off. Go west. Examine the Bible and the top of the cupboard and light the candle with the lighter. Now go east and down twice. Go east and down twice. Now go west.

Drop the first three cards that are nearest to the control panel. Examine the drawer above the chair. Examine the mirror on the top right until a switch appears. Flick the switch. Stop! Go east and up. Now go South West and get the ball from the pillar on the left of the stairs; drop it. Go through the door, down and west. Go through the door... ah ha. The time machine.

Flick the lever – that is on the wall next to the fuse box upwards. Put the fuses in the fuse box. Now pull the switch. Now go up and you're in the machine. Put the card that you are holding into the card slot and flick the switch... The next level.

Andrew Jackson and Carl Evans
Huyton, Liverpool

BAAL

ST

Six warriors are not enough to bypass the hazards, or to do any serious exploring, in the game. You are awarded an extra warrior every 5000 points. To gain points you must destroy monsters. It is possible to find a convenient refueling location that's got monsters nearby. Simply by moving between the fueling depot and the monsters (making sure you shoot the monsters), you can build up points and warriors easily. The process is tedious, but having scores of warriors makes the game less frustrating. Such a place exists at co-oridnates 08-49 on the first level.

Alan Hughes
Milton Keynes

GAMES UP FOR GRABS

Game Busters needs your tips, hacks and maps for any ST or Amiga game. Don't keep them to yourself. Send them now! And you might land yourself several major games titles. If you send in hacks on disk you could win yourself a special prize. It makes sense, so do it. Send you dodges to Game Busters, ST/Amiga Format, 4 Queen Street, Bath, BA1 1EJ.

Winners this month are:

ANDREW READER for giving the game away in Carrier Command. Amiga goodies on the way to him?
ANDREW JACKSON and CARL EVANS for their combined efforts in Chrono Quest. ST software on the way to them. Yes, lads, we would like the rest of the solution.
LEE DERYBSHIRE who gets a special prize for his superb Elite and Nebulus disk hacks.
CHRIS KINGSLEY who also gets a special prize for his Ice Palace, Thrust, Thundercats and Zynaps disk cheats.

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LED STORM

US GOLD

ST – Joystick. Reviewed. £19.95

Amiga – Under development

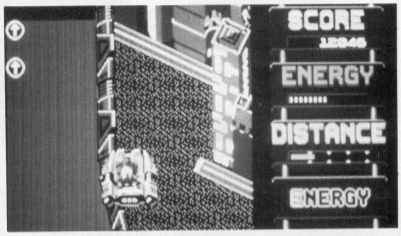
These futuristic, high-powered cars are all very well but they're not particularly well supported. Laser-powered turbos certainly give you incredible acceleration, and the ability to fly may well come in handy but what do you do when all you want is to open a can of beans and can't find a tin-opener?

US Gold have hardly resolved this fundamental question, but if you can do without your precious can of Heinz beans then there's nothing stopping you from venturing onto the city plains on an empty stomach. Your mission is to reach checkpoint Arthur at Sky City before your energy level runs out and you're turned into a scrambled egg. With nine levels, taking you from Capital City, across seas, tunnels, desert and valley before you finally get as far as your destination, make sure you pack your thermal undies and bermuda shorts.

This game is very much like an advanced version of *Major Motion*. You need to drive your vehicle along narrow roads, through tight spaces and avoiding gaps in the road. Clicking on the fire button allows you to leap into the sky – a necessary evil when the road ahead has been completely obliterated. Wouldn't that be handy as you navigate the roadworks on the M25?

Energy difference

You need to avoid enemies ranging from juggernauts to unfriendly frogs who can't be turned into a pancake quite as easily as their real-life counterparts. They affectionately cling on to you and prevent you from jumping into the air.



Additional powers can be picked up by collecting the different energy tablets. Flying tablets can only be retrieved by jumping, others lie in the road.

LED Storm is a vertically scrolling game with super-fast action. The graphics are not exactly mind-boggling and the sound effects will certainly ensure you keep your fingers in your ears, but the action is great. Leaping through a multitude of different levels gets extremely addictive.

▲ *Okay, where are the frogs? When the action gets tough the frogs make it tougher.*

still graphics 3.0
moving graphics 4.0
soundtrack 2.0
lasting interest 4.0
overall 71%

NIGHT HUNTER

ELECTRONIC ARTS/UBI SOFT

ST – Reviewed. Joystick. £19.95

Amiga – Due in March

Pick up your crucifix before you take hold of the joystick and go battling it out for domination of the Vampirean netherworld. This game from UBI Soft requires you to run around the different rooms of a house retrieving parchments and keys to get through the 30 different levels of 20 screens. You assume the role of a Vampire who must tackle all kinds of weird creatures which range from a brain-dead zombie (who bears a remarkable resemblance to Norman Tebbit) to the unlikely charms of a Robin Hood character who appears on the screen a little too often – which wouldn't matter if he didn't keep firing arrows at you.

Suck blood

You can look at life in two ways: either you're a really pleasant guy vanquishing your enemies by approaching them and sucking their blood or, alternatively, you can transform into a bat or a werewolf by making use of an odd joystick concoction. The werewolf has extraordinary strength which is activated by pressing the fire button – one punch and your enemies drop dead quicker a battery chicken.

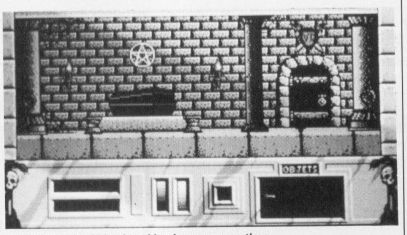
Becoming a bat doesn't give you any special features but it does allow you to zip through each screen.

Smooth mover

Occasionally you can come across a magical door which glows blue and red, rather like an Sellafield Bay mackerel. This is the door through to the next level, but unless you've accumulated three parchments and five keys then you're stuck.

The game's animation is colourful and fairly smooth. A slight hang-up as you move from one level to another becomes frustrating at times but you soon learn to put up with it.

Sound is limited to blood-sucking slurps and lots of spot effects which quickly become monotonous, but when Dracula extends his arm and goes for a bit of blood-sucking he actually looks as if he's enjoying what he's doing.



▲ *Go for a bit of blood-sucking in your spare time.*

still graphics 3.5
moving graphics 3.0
soundtrack 2.5
lasting interest 3.5
overall 69%

INCREDIBLE SHRINKING SPHERE

ACTIVISION

ST – Reviewed. Joystick. £19.95.

Amiga – Out February. £24.95

What gets bigger when excited and grins when it's on a mission? No, silly – it's the Incredible Shrinking Sphere. With spheres, icons and a range of beasts you'll need at least six eyeballs and a multi-tasking brain to keep track of all the action. Considering the quality of Activision's recent major releases – Afterburner, R-Type and ISS – you know you're in for a treat.

■ *With three different sizes of sphere you'll soon be begging for a magnifying glass.*

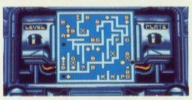
GAMEPLAY

Sangfalmadore might sound like an Italian recipe for boiled pasta with added vomit but it is actually the Sphere Corps' training arena, affectionately known as the Death-Run. Matt Ridley, a frustrated desk-bound officer has lost his marbles and gone in, but he couldn't handle it and is marooned somewhere in the middle. The only way he's going to survive is if you get to him in time. Undaunted, you climb into your fighter sphere and follow.

The plates within the training arena are arranged in tiers, four deep. Tectonic tiles lie within each tier and these affect control of your fighter sphere. Passing over a tile activates a timer which causes it to vaporise later – if you pass over a hole you fall through and die.

The real problem with manipulating your sphere is changes of size and mass. Passing over certain tiles causes your molecular structure to alter, so your weight changes. Some tiles are fragile, so passing over them when you are heavy causes them to collapse and you to plummet to destruction. Wandering around the maze when you're large is like wheeling a skip through Sainsbury's – certain walls come so close together that it's impossible to pass through.

Shield icons and firepower are available which are pretty essential when the screen begins to fill with aliens and life starts looking hopeless. White holes and black holes provide access to other tiers, and should you lose a life then you begin again on the same level with the ammunition and shields which you'd had at the start of the level.



▲ *You can position ammo dumps at the start of the game, allowing you to get your hands on a range of firepower.*

CONCLUSION

This is the sort game which'll have you more hooked than an acid house party, so battling through to a pinnacle of success only to find that you can't saved the high-scores to disk is a major blow.

Controlling the sphere takes a lot of practice because this isn't just another *Pacman*. With an ever-changing mass, firepower and more than twenty different tiles you know you're in for some *real* excitement.

ST VS AMIGA

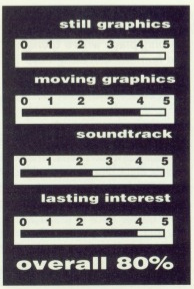
Graphics in the two versions are virtually identical but it's in the sound department where the changes really show up. The Amiga has far better sound effects, from the simple bouncing of your sphere through to an impressive loading music. The Amiga version is also very much faster although it's disputable that this is an advantage. Certainly the ST game is far easier to play and in an already difficult game that's got to be a bonus.

GRAPHICS AND SOUND

The action takes place in a window surrounded by information about your speed, lives and state of your shields. Progress through the levels is met with different styles of maze and increasingly impressive tiles. Your wanderings are often hampered by collisions with the binary boosters, which has the effect of bouncing you between two points fast enough to have you thinking you're on an InterCity special – probably the 7.18 to Clapham Junction.

▲ *The range of firepower.*

Sound effects are fairly basic on the ST version. Limited beeping and bopping spot effects accompany your progress around the maze and emerge as you move between levels or encounter aliens.



REVIEW

WHO FRAMED ROGER RABBIT

BUENA VISTA SOFTWARE/GAINSTAR (TEL: 0252 877431)

Amiga – Reviewed. Joystick. £29.99 | **ST – no version planned as yet**

Hollywood, 1947. You're walking down the main-road of Toontown when some smart rabbit in a polka-dot tie dashes up and gives you a big kiss. Yup, you guessed it. Roger Rabbit has beat a path onto the 16-bit scene.

GRAPHICS AND SOUND

Brilliant graphics ensure that the characters actually look and act like cartoons. When Roger gets drunk he stops running, spins round eventually collapsing on the floor. Realistic, or what? Even the cars look exactly like the Disney vehicles.

Even though huge graphics hurtle round the screen, the game is remarkably nippy. Action is fast with Roger racing round tables so quickly you'll think you've just come back from a night on the town. Sound effects haven't been forgotten either: a terrific stereo soundtrack gets your foot tapping.

■ *Just tell 'em Walt sent you.The Ink and Paint Club - the only place where toons and humans can hang out together!*

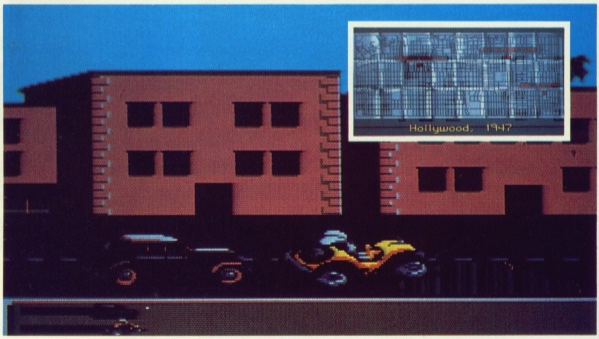
GAMEPLAY

Toontown is a unique area of 1947 Hollywood where cartoons and humans share the same sidewalk. The star of the show is Roger Rabbit who's just an ordinary guy *(don't you mean rabbit? – Ed)* who's been framed for killing Marvin the Gag King. Marvin's will mysteriously goes missing at the same time. Consequently the heat's on Roger. The heat in this case is 'toon hunter' Judge Doom. Doom's not to be messed with: he carries Dip which melts cartoons. Roger's got to be quick if he's going to keep out of Doom's grasp and find Marvin's will.

The game is split into three parts – Benny the Cab, Ink and Paint Club, and the Gag Factory. Benny the Cab is more than just a racing game. 1940-style cars head towards you in both lanes; you must jump over the cars, avoid green Dip and cope with the strange joystick control. No easy task for a wabbit.

The Ink and Paint Club is the only place humans can go to enjoy live performances by toon stars – but you're not interested in any of that. Marvin's will has been written on a receipt in disappearing ink, so you have to dash round all the tables picking up receipts and avoiding glasses of Bourbon. Whatever you do, don't let Roger touch a drink 'cos once he gets drunk he's dunked in the dreaded Dip.

The Gag Factory is where the toons are made. Unluckily the weasels are waiting for you and you'll need to make them laugh themselves to death. This tricky feat is achieved by picking up as many gags as possible. Once again you'll need to master odd joystick combinations to pick up and use the gags – get it wrong and a gag could backfire.



■ *Shhhhhhhh! Be vewy, vewy quiet. I'm hunting wabbits. Benny might not talk like a saint and his driving often has you wheeling around on the top of buildings avoidings dip but he does his job.(inset) Holy Mother McKray! Who d'you think I am, Shirley Temple? Finding the Ink and Paint Club ain't easy ya know.*

CONCLUSION

For all its brilliant graphics, sound and speed, Roger Rabbit has one major fault. The game uses an illogical number of disk swaps. The packaging claims that two drives are an advantage... they're a necessity! It takes eight disk swaps to load the game. And even with two drives it'll be ten minutes before you're playing. The frustration doesn't stop there: every time the game comes to an end you have to reload it – great if you have masochistic tendencies.

Buena Vista is a subsidiary of Walt Disney and the superb graphics reflect the high-standard you'd expect from them. Joystick controls are likely to take a lot of mastering and with only three levels you could find that the addictive factor doesn't stand too much battering. The game strongly resembles the film so it'll be as well received.

still graphics 0 1 2 3 4 5

moving graphics 0 1 2 3 4 5

soundtrack 0 1 2 3 4 5

lasting interest 0 1 2 3 4 5

overall 70%

COSMIC PIRATE

PALACE

Amiga – Reviewed. Joystick. £19.95 | **ST – Available beginning of February. £19.95**

▲ *The toll gate is the place to be – it's surrounded by aliens making it easy to build up the score.*

Blast 'em all away, show 'em who's boss. Become a space-pirate and watch the universe tremble at the very mention of your name. The days of the goggle-eyed aliens are numbered. *Cosmic Pirate* comes from the same guys who created *Barbarian* (remember that? It was the game which displayed a lot of Maria Whittaker).

GAMEPLAY

You take on the role of the infamous Guy Manly who, after leading an uneventful life, has decided to become a space pirate. Can you blame him – pirates get all the girls and most of the parrots?

You begin the game by selecting a mission and launching into hyperspace. By moving around and shooting at aliens you can build up your score, essential if you're going to pass through the toll gate (a sort of black hole with a pass fee of 1000 points). Once through the gate a cosmic sector map appears and you choose a new sub-sector destination. The objective is to find a ship to disable and drag back home for massive bonus points. The sector map lets you pinpoint the correct sector to move into and you then follow an on-screen marker leading you to the ship. Disabling it requires a concerted blast until it gives up trying to hurt you – very tasteful.

Assuming you manage this awesome task without your ship exploding into something resembling the quake-ridden hills of Armenia, the next step is to tow the ship back to Nest51 (your home). Do this and you'll receive an exorbitant pay packet, but unfortunately you're not allowed to keep it. The council, a sort of futuristic Tory government, takes between 90% and 99% of your profits.

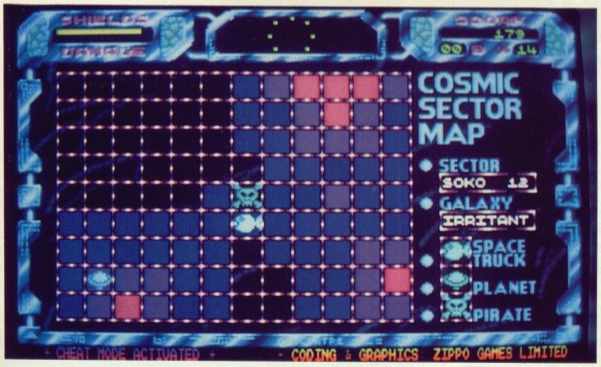
With your remaining wealth you can purchase extras for your craft which give additional firepower or improve your speed. Then it's out into the cosmos for another earth-shattering session.

◀ *You'll need to fire at the ship for some time to destroy it. Dragging it back to base is not only greeted with financial rewards but runs so fast you'll find it a useful way of ruining your eyeballs.*

CONCLUSION

With your progress and additional ship equipment being saved to disk at the end of each game you soon learn to like Cosmic Pirate. It's a bit like *Dungeon Master* with action. Locating the different pirate ships and watching your score climb, knowing that in time you'll be able to buy a much-prized sony cutter, is like saving your pocket-money for armadillo feed.

The speed of your pirate ship is mind-boggling. Everything moves so quickly you'll feel like bringing up your supper. Graphics and sound are impressive but best of all it has an addictive gameplay. This one'll have you coming back so often your joystick will beg for a break.



▲ *The cosmic sector map – find a ship and then make some attempt to get to it.*

GRAPHICS AND SOUND

The game has been written in medium-res but by making use of the Amiga's hardware the range of colours has not suffered. Dragging pirate ships back to base is almost spell-binding. The background is scrolled at incredible speeds, even for an Amiga, and in no time at all you'll be back home.

The pirate ships might look good but the other space craft don't bear much resemblance to those in *Buck Rogers*. Dressed up as kaleidoscopic bubbles they'll have you questioning the sanity of the universe, but they do look brill when blasted.

Sound is good too. Great stereo effects and opening tunes ensure the game is well supported musically. The usual zapping and white noise of most outer-space shoot-em-ups has been replaced with far better spot effects.

still graphics 0 1 2 3 4 5

moving graphics 0 1 2 3 4 5

soundtrack 0 1 2 3 4 5

lasting interest 0 1 2 3 4 5

overall 79%

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TALESPIN

First there was STAC then STOS and then there was SEUCK. Microdeal, in the name of common sense, have released the more conventionally-named Talespin adventure-game creator. MARK HIGHAM steps into the vaults to tell you a tale.

GRAPHICS

£49.95 ■ ST & Amiga ■ Microdeal, Box 68, St Austell, Cornwall PL25 4YB (0726 68020)

So you want an adventure which can take you all the way from the cryptic caverns of an Arthurian legend to the smiling faces of the Acid House gang? Microdeal's *Talespin* is a do-it-yourself adventure game creator designed to let you build whatever universe you like and maybe (claim Microdeal) even sell it!

Unlike some systems, you won't need a degree in mathematics and 2000 years of programming experience to master Talespin. Even the end product, more of a role playing game than your usual text-with-pretty-pictures-adventure game, is entirely mouse driven so you don't need to have a secretary's skilled typing fingers. Just point and click.

What you *will* need if you're going to create anything half-decent with Talespin is the ability to draw good pictures using either Neochrome or Degas Elite – not a simple task.

Spinning a yarn

Once you've decided on a basic design, the first step in creating your game is to design lots of relevant backdrops and characters using Degas or Neochrome. You can easily alter the sizing of images, reverse them so that they're facing in the opposite direction, change or edit colours once in Talespin later on.

Armed with all your picture files, your next move is to load Talespin and import them. By making use of the screen editor, incorporating such options as spray, fill, line and an unusual 'blob' feature (a sort of finger-painting exercise), you can do all the essential fine-tuning to make sure your sketches look great. A Create Page option then allows you to introduce your images. Talespin allocates a separate colour palette to each page – this feature comes in useful if you want to re-use pictures from other screens and make them look different by altering the colours.

■ *Talespin is entirely mouse-driven so designing a game is easy. Menus are used throughout the program allowing you to import graphics, move, scale and colour your pictures. Talespin comes with its own screen-editor but you'll need to have created your pictures using Degas Elite or Neochrome first of all.*

Organ donation

The adventure you're aiming at is of the type where the user clicks on a character and up comes a speech bubble saying what's going on and providing game choices to click on.

To construct your games you simply 'walk through' the plot: starting from an initial scene, you import a graphics screen, choose which of your characters should be shown and position them accordingly. Each character can be allocated a speech bubble which the player will click on – you need to enter the text which is to be displayed, and set up 'variables'. By assigning variables to text entries they're automatically turned into clickable options, determining where the game goes next. You then design the following scenes, and the ones they lead to, and so on until the end. You can mix and match backgrounds and characters from other scenes so you don't need to design a complete Degas screen for each game position.

As an example of variables, you could create the variable DONOR and set it up so that it would exist in three states: HEART, LUNGS and KIDNEYS. Clicking on a certain character when playing the game could then bring up the message: 'Donate which organ?' followed by the possible organs. Clicking on heart would set the variable DONOR so that it held the value HEART. In this way when you reached another point in the game you would be able to see if DONOR held HEART and display specific messages or go

TALESPIN VS STAC

STAC from Incentive has been around for some time and until now it's been the only contender in the adventure-game creator market. STAC games tend to be far more of the usual run-of-the-mill adventure game combining pictures with text. Talespin, on the other hand, offers a role-playing adventure with characters to click on.

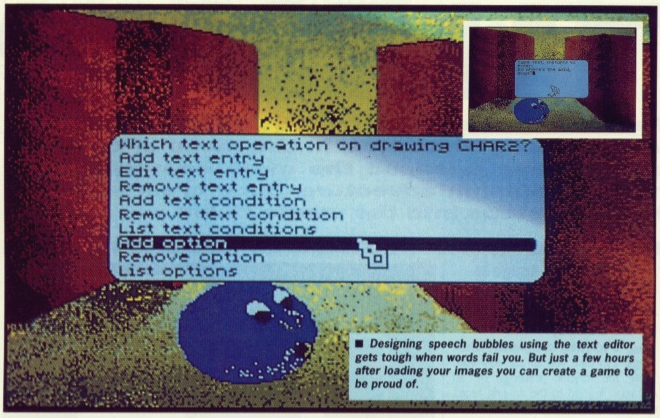
By the very nature of Talespin's icon-clicking interface the resulting games will all seem similar, but this is not so with STAC. It offers a better built-in graphic editor which can be used to create pictures as well as touching up Degas or Neochrome files. In addition, the end-product can be entirely stand-alone without the need for a tell-tale execution program.

Which you prefer depends on the kind of game you want to produce: traditional text descriptions with typed replies are STAC's domain, a more RPG-like icon system is Talespin's. They both work well.

GRAPHICS

TRIED AND TESTED

Microdeal released *The Grail Adventure* last year which was designed using Talespin. The game took 4 months to create but the programmer only worked part-time, so there's hope for you yet.



■ *Designing speech bubbles using the text editor gets tough when words fail you. But just a few hours after loading your images you can create a game to be proud of.*

BACK TO PAPER

Before you load up Talespin and start drawing all your characters it is a good idea to sit down with a pen and paper and decide what you want to do with the game. Laying it out as a tree structure with a start and end point is probably the best way to go about designing your adventure. Inserting lots of twists, turns and dead-ends all over the place is what keeps this sort of game alive so make sure that the branches linking up the tree-structure are as contorted as possible.

Along the way you can pick up lots of different objects which can then be used in the final part of the game. For example, *The Grail* had a wizard who wandered through forest and towns to collect the much sought-after Holy Grail. Unless he had performed certain courageous deeds and proved himself a worthy wizard he could not pick up the Grail even if he reached it.

Designing screens using Degas or Neochrome is undoubtedly going to take an age, but it is the graphics which make this type of game popular so its worth spending the time here. One of Talespin's best features is the ability to create a very simple adventure game and then expand on it more and more to turn it into something really brilliant. Maybe even a Format Gold contender?

to a different point in the adventure.

You need to set up one scene for every possible set of options the player might choose, specifying background images, characters, speech text and options for each. Every page has a name, and different strands of your adventure join up at a later stage by going to the same page.

Sound effects can be imported from Microdeal's *Replay-4*, so in theory you could set up a game to you have your sister's screams coming out every time you click on a grinning wizard. (At £79.95 Replay-4 is a costly but good sound-sampler.) Talespin uses sampled sound effects in their 'raw-data' format so it should be possible to use samples created by other packages too, although Microdeal are reluctant to specify which ones. It might have been worthwhile to include simple sound effects designed using Talespin but no such feature is on offer.

The adventure ended

When you've finished designing your adventure you can use the auto-play option to move through the different screens testing all your variables and following the path of the game.

Once you're completely happy you can save it onto disk and set it up to run as an auto-boot program by copying it into an AUTO folder and renaming the game to START.TEL. The player program TELLTALE.TOS is freely redistributable, which means that you can give it away with adventures you write and sell.

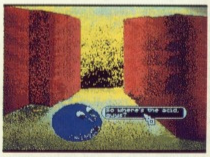
Microdeal say that they are currently developing a multi-disk feature so that you'll be able to stretch your game out across two disks. This facility will vastly expand on the possible number of screens and could allow you to create an adventure of truly mega-proportions.

End of the tale

Talespin is not a quick way of creating games. It'll undoubtedly take hours to design enough backdrops and characters essential to a good adventure.

Up to 50 completely distinct screens may be included in one game largely as a result of clever file compression methods. An image used on a page can be re-coloured, re-sized and re-used in another without counting as a full new screen. This gives access to potentially thousands of apparently different locations.

As with all non-programming game creators, the resulting adventures have limited possibilities – with the TELLTALE program essential for executing a game, there is no way of disguising the fact that you've used



■ *This Format Gold was designed in just three hours. Up to 50 screens can be made up using Neochrome or Degas and then imported into the program. Using the same characters on other screens or similar backdrops you can end up with an adventure across 1000 different screens.*

Talespin. However, Talespin does offer the opportunity to create an RPG type of adventure-game, which STAC and STOS certainly won't. It can't improve your drawing abilities and it won't check your spelling but if you're prepared to spend hours creating good graphics then you can achieve something really impressive.

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

manuals NOT SEEN

format value 0 1 2 3 4 5

for

- No programming knowledge required
- Graphics cleverly reused for variety
- Can incorporate extensive sound FX

against

- Minimal graphics editor, no sound editor
- Only one basic type of game can be created

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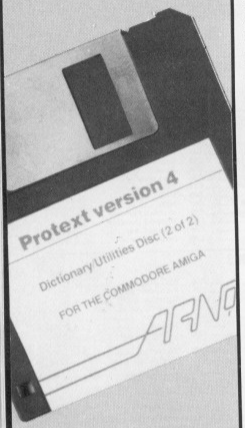
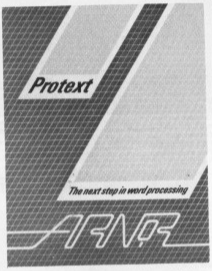
ACCESS

REVIEW

PROTEXT 4

Protext has been through a number of incarnations to reach version 4, and this latest version has been released for the first time on the Amiga. Could it be the first great word processor for the A500 and above? SIMON WILLIAMS gives his view on posterity, and whether Protext is destined for it.





£99.95 ■ Any Amiga, ST version also available (currently £79.95, will rise to £99.95 soon) ■ Arnor Ltd., 611 Lincoln Road, Peterborough PE1 3HA (0733 68909)

In some ways it's hard to review Protext. It has become second nature to most of the *Format* team, as it's our chosen word processor for all text written in house and everything that appears in the magazine is sub-edited through it. Why did we choose Protext and how does the latest version, recently released for the Amiga, compare with other versions and other word processors?

The answer to the first question really gives a brief history of Protext. It started life on the Amstrad CPC, progressed to the Amstrad PCW and from there to the PC. The hand-picked team of international experts who were brought together to launch ST Amiga Format had all used the program extensively on other machines, so it made sense to go for Protext again, particularly since the program had just been released for the ST and a version was promised for the Amiga.

Amiga Protext comes on two disks, which are tucked into the back sleeve of a ring bound manual. The manual itself is well written, and covers all the features of the program thoroughly, though it's a enigmatic mixture of tutorial and reference which can make it difficult to find information in a hurry. More annoying is that the manual is written for the PC version and the Amiga specific sections are relegated to an addendum. While appreciating Arnor's arguments for speedy updating of future documentation using this technique (and their internal convenience) it does make some sections of the manual quite awkward to read.

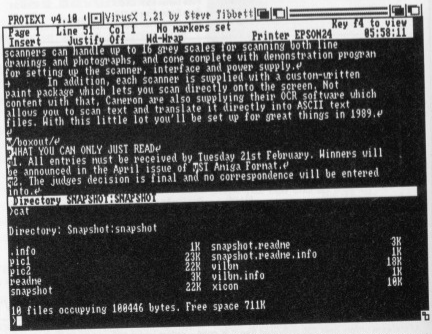
A new installation

Installing Protext on an A500 or a single drive A2000 is simple enough, and basically involves copying the two master disks onto working floppies or a folder of your hard disk. On a twin drive A2000 with an external drive things are not quite so simple. The Amiga treats an external drive as DF2: not DF1: so you have to know enough about the Amiga's CLI to 'assign' DF2: to DF1: in the startup sequence and then set the Protext configuration for twin drives. Not an easy process, but one which Arnor aim to remedy, probably by the time you read this. The Amiga program comes in two versions – a full version for machines with 1Mb and above and an A500 version. The appropriate version for your machine is automatically selected when you start up the program. On the ST, a single version runs on all models.

Once installed, Protext will boot from cold to its main display screen. Initially this is divided into three areas, a two line status bar at the top of the screen, a text area and, below a horizontal bar, a nine line command area. Pressing [Esc] switches between command and edit modes when the command lines disappear to make more room for text. The status bar shows the normal page, line and column numbers and indicators for edit mode, justification, word wrap, the type of printer installed (there's a wide range) and the time. This last indicator is quite a novelty as it displays in real time (assuming you have a battery backed clock and have set it up with Preferences and SETCLOCK).

Edited highlights

Immediately below the status bar is the ruler line and below that lots of space for your matchless prose.



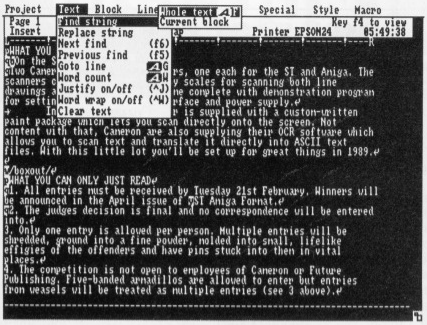
■ *Protext command mode includes the detailed CAT command for taking a catalogue of files on a disk (the CP/M and MS-DOS-style DIR does the same thing).*

EARLY VERSIONS

The first version of *Protext* was written for the Amstrad CPC 6128 and CPC 464 under CP/M Plus. There was also a version in ROM for the same machines. This early version lacked many of *Protext's* current features, like macros, twin file editing and many of the more advanced stored commands.

Next on line was a version for the Amstrad PCW word processor, which rapidly became the main alternative to *LocoScript*, with some 25,000 sold. This in itself was quite a feat, as *LocoScript* is supplied free with the PCW.

Version 4, first released for the IBM PC, contained a number of improvements, and was then adapted for the ST and now the Amiga. Arnor say they will only be building on these three implementations from now on.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Page 1 Find string Current block Key f4 to view
Insert Replace string F8 Printer EPSOM24 05:49:38
Next find (f6)
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Goto line Alt G
Word count Alt W
Justify on/off (^J)
Word wrap on/off (^W)
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/boxout/
WHAT YOU CAN ONLY JUST READ
1. All entries must be received by Tuesday 21st February. Winners will be announced in the April issue of ST Amiga Format.
2. The judges decision is final and no correspondence will be entered into.
3. Only one entry is allowed per person. Multiple entries will be shredded, ground into a fine powder, molded into small, lifelike effigies of the offenders and have pins stuck into them in vital places.
4. The competition is not open to employees of Cameron or Future Publishing. Five-banded armadillos are allowed to enter but entries from weasels will be treated as multiple entries (see 3 above).

■ *A typical Amiga Protext editing screen, showing pull-down menu system*

Protext doesn't offer any fancy screen fonts but concentrates instead on fast text entry and editing. This is quite a change for an Amiga word processor. Many of them go overboard on fancy fonts and other pseudo-DTP features which may look half decent on screen but are only ever printed out as screen dumps. Without exception, graphics based printing on dot matrix printers is very slow and for many purposes not necessary.

Where the program is very good is in providing every editing control you could reasonably ask for. As well as being able to move the cursor in steps of character, word, line, paragraph, screen, page and document. You can transpose adjacent characters (handy for correcting the commonest ytping errors), change words into capitals or lower case, delete to start or end of a line as well as deleting the whole line, and undelete it again if you need to.

Protext provides a number of markers you can set into the text. You can set place markers to return to specific points in a document and also a multiple marker so you can cycle through a series of markers, perhaps to fill in text at each point. There are also special markers to let you highlight a word and exclude it from a subsequent spell check – useful if there is a proper name or other word you know won't be in the dictionary.

Foreign accents and some foreign letters, such as the German ß, are preassigned to Alt key sequences, and you can insert them directly into your text. A line drawing mode is also included which intelligently inserts junctions and crossovers as you drawing boxes with the cursor keys.

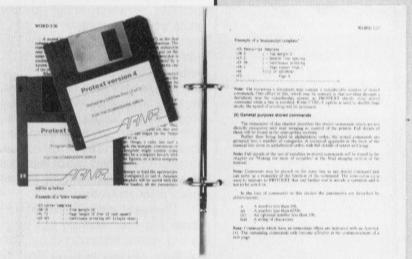
Tabs are well handled, with straight and decimal tabs available anywhere within a ruler line. You can insert an number of rulers within a document, which is just as well as layout such as a hanging indent can only be achieved by setting a new one up and reinstating the original one at the end of the hanging paragraphs. Reformatting can be switched from manual to automatic, but an automatic reformat only takes effect when you type a cursor key or return. If you're trying to move through an unformatted paragraph to a specific edit point the words shuffle from one place to another.

On the menu

Most versions of Protext include a pretty thorough menu system which covers most of the features you are likely to want from the program. The Amiga version makes use of the standard pull-down menu system, and a click on the right hand mouse button brings up a menu bar in place of the window header, as usual. Running through the menu headings gives some idea of the scope of the program:

Project – covers loading and saving files, copying them, displaying a sorted directory, swapping to a second text file (Protext can work on two files at once quite happily) and switching from document to program mode, which affects features like word wrap.

Text – includes search and replace functions and a word count (hooray!), as well as switches for word wrap and justification.



Block – provides all the block functions and a 'box mode' switch. Box mode lets you mark off any rectangular area of the document and move it around independently of the rest of the file. Great for tables and multi-column text.

Line – gives long-hand ways of deleting and inserting lines, joining two together, splitting them apart again and centring them.

Print – provides all sorts of printing options and includes typewriter mode, where you can type direct to the printer for envelopes and things (Digita eat your heart out!)

Spell – calls up the spelling checker to check a word or all words in a file. A sub-menu also offers dictionary utilities, including a useful anagram finder for crossword addicts (though, of course, it will only find single words).

Special – deals with markers and footnotes, which Protext will tie to your text for you automatically.

Style – offers and easy way to

ON THE ST

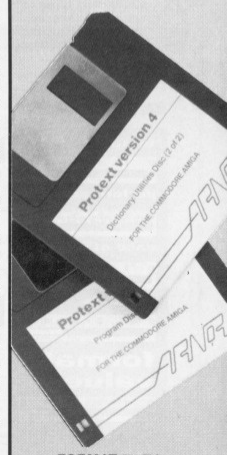
Protext has been available on the ST as version 3 for around six months, and was covered briefly in the word processor survey in issue 1. Most of the comments made in this month's review apply to the new ST version 4 as well as the Amiga one, bearing in mind the differences in the two machine's operating systems and the fact that the ST version doesn't run under GEM. This means that the only pull-down menu you can access from the ST version is the Desk menu to get at your desk accessories. You can run any ST program from within Protext, though – programmers could edit a source code file, compile it, run the program, then edit the bugs out without ever seeing the ST's GEM desktop.

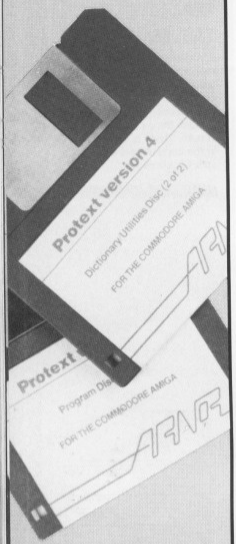
What isn't there is the pull-down menu system for controlling Protext functions. Instead, there's a separate help screen and menu system for many control and layout functions and this can be called from command or edit modes. The same low-level access is provided and TOS commands can be typed from the command line in the same way CLI commands can by typed in the Amiga version.

ST Protext works with medium resolution colour and high resolution monochrome displays and compares well with its main rivals, 1st Word Plus and ST Writer, though both these GEM-based packages can incorporate graphics. Protext goes for speed and beats them both on editing and spell checking.

SEPARATE TABLES

If you are editing two documents in Protext, say a table and text file, you can copy text between them, but you can't display parts of each file on the same screen. There is no facility in the current version to split the screen.





insert any of the text style markers (eg bold, condensed, proportional spacing, super and sub-script).

Macros – provides facilities for recording, storing, reloading and replaying macro commands from within Protext.

EXECtly right

One of Protext's strengths is its programming facility, which starts with the macros and ends with complete executable files which run from within the word processor. Macros can be recorded by typing the actual keystrokes which would preform a function manually. The macro, which is normally assigned to an [Alt] key sequence can then be replayed from any point in the program. For instance, you could make the single keystroke [Alt]C take you into command mode, count the words in your document, and return you to your correct editing position afterwards.

Stored commands and command mode commands are the basis of EXEC files, which are effectively short program segments written to automate word processing or mail merge functions. Stored commands take the form of a '>' sign followed by a two letter mnemonic. They cover all manner of functions from formatting text to structuring programs (repeat..until loops, if..else conditions and the like) and there are nearly 80 of them. They include the facility to define and manipulate variables, which is particularly useful for mail merging, but has many other applications as well.

Command mode commands are those you would normally type directly into Protext when not editing. Many of them are also available from the menus too. These include editing utilities like COUNT to count the words in a document, file commands like LOAD, SAVE and MERGE, and configuration commands like PRINTER, SERIAL and PARALLEL, which determine the type of printer and where it sends its output. All of these commands can be built into executable files by typing them into Protext and text files.

Once they're in there, they can be executed from the command line with the EXEC command. This is undoubtedly one of the most flexible features of Protext and opens all kind of scope for application written around the word processor. Indeed, see the separate panel on Protext Office, a subsidiary package written entirely in the Protext EXEC language.

HOW FAST IS FAST?

So Arnor say that Protext is fast. Just how fast is it? We made up a 6000 word document (about 35K of text) with a given word occurring 207 times. and this is how fast Protext managed to find it and replace every occurrence, compared to other leading Amiga WPs:

Protext	WordPerfect	Scribble	Vizawrite
3.7s	8.6s	35s	655s

PROTEXT OFFICE

This is a separate package sold by Arnor (£34.95) for use with Protext. It consists of two parts, Protext Filer, which is an address-based database, and an invoicing system which has the virtue of having been used by Arnor since they first put Protext together.

Both programs are written as executable files and make good reference material for anyone thinking of writing an application in Protext's language. As well as being able to deal with variable or fixed-length records, Filer copes well with datafiles from other programs (you can of course use the Protext language to write your own conversion programs, if necessary). The main advantage of using Protext as a database for your mailing list as well as a word processor is that you can edit the data file as a simple text file, using any of the word processor's sophisticated editing and look up functions. Sophisticated sorting facilities are provided by a separate program called FSORT, and this is remarkably quick and easy to use.

The second part of Protext Office is an invoicing system which is ideal for a small business or someone selling from home. All the standard requirements, such as VAT, discounts and carriage are included.

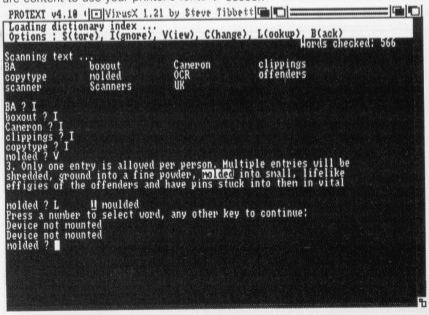
A useful extension of Protext, in any of its many guises, and a good illustration of what can be done with the Protext language.

Write on?

Protext really is the best text processor on the Amiga, with two provisos – that you don't want to include graphics in your documents and that you are content to use your printer's fonts rather than downloading graphic ones from the Amiga. For serious word processing, printer fonts will be both faster and more presentable than the low resolution fonts derived from the Amiga screen.

The requirement to include graphics is perhaps more pressing, given that the Amiga is such a graphics-oriented micro. If Arnor put some in adding new EXEC functions it ought to be possible to dump graphics screens from within Protext, but it won't be easy and there's no form of integration built into the software.

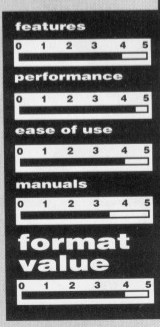
Protext deserves to be on anyone's shortlist for an Amiga word processor.



■ *The spell checker can run through files as you edit. In this mode you can view the suspect word in context and ask for replacement suggestions. On an Amiga, you need 1Mb of memory to spell check within the editor - on an A500 you have to quit Protext and run a separate utility. If you have the memory, copying the dictionaries to RAM speeds checking up dramatically.*

NAME CHECK

Arnor, the company which produces Protext, is named after the land of the elves in J.R.R. Tolkien's *The Lord of the Rings*. **The company also produces assemblers, C compilers and other language products.**



for

- Extremely configurable with good low-level access
- Built-in command macro language to automate editing
- Twin file editing
- Spell checker and mail merge included

against

- Can't incorporate graphics into documents
- Can't make use of Amiga fancy fonts

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GRAPHICS

SCULPT 4D

The Amiga has a startling range of animation packages. The latest money-is-no-object package is comparable to heavy-duty professional affairs. Joe Benzing, creator of many fine animations, looks at this monster package.

£368 (upgrades from Sculpt-3D – POA) ■ Amiga with 1Mb and two floppies required (2Mb recommended) ■ Byte by Byte/Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh, EH1 3RN (031-557 4242)

Here's the latest in the *Sculpt* ray tracing range from Dr Eric Graham. You're probably wondering what extras – apart from the obvious price hike – have been added since the 3D version. Much! Inside the attractive box is a new manual (which includes tutorials), 68000 and 68020 micro-processor versions of the program and a data disk. *Sculpt Animate* now forms part of the package; you no longer have to flash extra cash for this.

Tri-view windows – which represent your 3D world and first became famous in *Sculpt 3D* – are present. Loading and saving functions now benefits from a proper file requester. These are one-step operations with drawer, file, and disk volumes. It is even possible to rename or delete files within the requester. Edit Modify Faces now handles object side-attributes including colour, texture and smoothing. A lot of the menu commands now have a key equivalent. And there's the facility for setting up key strokes to suit your requirements. (This is simply done by holding down the [Alt] key then pressing the alphabetic key of your choice.)

To place fonts in Sculpt 3D's Tri-view system required lots of time – even if you use *Fancy-3D Fonts* – because the fonts have to be lined up to your satisfaction. Not so with 4D. The Project menu has a requester called Project Load Font. Pressing any key that has a graphic symbol assigned to it – once the font has loaded – causes the required character to load into the current window and the cursor to advance to the right by a character space. The scale is automatically assumed by the height of the current window. You can still use your fancy 3D fonts as well. The whole process really is neat.

Script files are also possible. These are extremely useful for creating programs that generate very sophisticated scenes. You will have to have solid programming skills to use this facility though.

The image modes have had some major changes. There are still painting, sketch, snapshot, and photo options. But the snapshot, photo and rendering times have been improved two-fold. This goes for both the 68000 and 68020 versions of the program. Several scenes that were originally created on the old Sculpt-Animate were rendered using 4D; in some cases the time to produce the picture was cut in half. Of course, there is a price – a scene with 6000 faces requires nearly 4Mbytes to render to photo-image quality!

Heart rendering

'Scanline painting' and 'scanline rendering' are two new options. Scanline painting yields a result much like the original painting; scanline rendering is useful for objects that cover a relatively small portion of the image or that have many intersecting faces. Scanline snapshot is also provided. This is best used for speeding up HAM mode operations. Realism is added by slapping shades smoothly across faces. The only textures that work in this mode are matt and gloss. The ultimate mode is still photo mode as shadows and the like can be included.

HAM rendered scenes turn out superb; the antialiasing produces lovely smooth images. There is still the option of using up to 24 bit-planes, which gives you up to 16 million colours and resolution of up to 1024x1024. Naturally your Amiga can't display this. If you can find someone with a Honeywell PCR, or a 24-bit imaging system, some really neat output is possible. A frame buffer will be needed for RGB data animations.

In the Edit Faces menu there is a new texture called 'metal'; as expected, it combines the properties of a shiny and reflective surface. Some of the light is reflected and some is scattered, giving a metallic effect. Within the Smoothing menu, phong shading is now provided – good for curved surfaces.

Thumb screw

The Helix Tool lets you build objects with helical or spiral symmetry. For

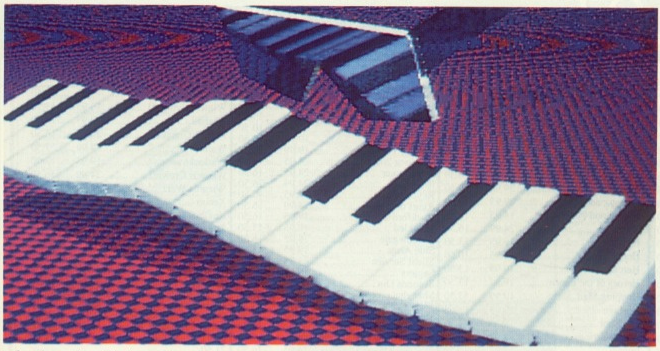
■ *Joe Benzing's Lampo animation – a fully rendered, fully ray traced still produced with Sculpt 4D shown here – was at the wire-frame stage at the August 1988 Amiga Centre Scotland Animation Show. Just look at it now! Joe collected a runners up prize at the time even though the work was nowhere near complete. The full demo consists of two lamps performing a choreographed dance.*

JARGON BUSTER

If you don't have a clue what rendering is, then Sculpt-4D probably isn't for you. But here's a quick layman's guide:
WIRE FRAME - The first stage of a model of a 3D object. Every edge is drawn as though it were a model made of wire.
RENDERING – Filling in the surfaces of the wire frame model with solid colour.
TEXTURE – the 'look' of a surface; metallic, gloss, matt etc.
RAY TRACING – the final stage of a 3D model. You specify where the light source is (eg. the sun in the sky), and the program works out where all the shadows and reflections should fall.

GRAPHICS BIBLE

***Fundamentals in Computer Graphics* by JD Foley and A Van Dam, according to many professional computer artists and animators, is the bible when it comes to explaining graphics terminology. The book is published by Addison-Wesley, ISBN 0201 14468 9, and costs £26.95. If you have difficulty finding the book try Computer Manuals Ltd on 021-706 6000.**



■ *Jazz is another of Joe's creations. This one took 45 minutes to render and ray trace – mind you, that was on an accelerated Amiga. The Hurricane booster board used comprises a 68020 and 68881 maths co-processor. Cost is around £1144 from the Amiga Centre. Jazz uses 4096 colours and is displayed in full overscan mode.*

instance, a screw thread, Catherine wheel or coil spring. This is all handled by a control curve. The control curve is made of a series of linked edges and vertices. Each edge of the control curve corresponds to one complete revolution, or twist, of the helix. The length of each edge of the control curve will determine the length of the corresponding twist.

Finding the centre of an object has been made easy with the new snap-to-centre command. Along with more conventional items like snap to nearest vertex and snap to grid, there's snap to the centre of gravity. All useful stuff.

The manual contains handy sections on creating animations for running from hard disk and floppy. A utility is included which lets you move animations from hard disk to floppy. Essentially the utility splits animations at convenient locations. Really nice if your work is on the large size. If you have a genlock device there is a toggle enabling you to retain 4D background colours. There's also the facility for using full video if you intend recording to tape or using a genlock. There are drivers for both single frame recorders and frame buffers. Both the driver and source are obtainable from Byte by Byte in the States.

Set your sights

Within the Coordinate menu there is an automatic tape measure. You can use the tape measure to scale objects precisely. There are two end marker gadgets, one per side. Clicking on one gadget will place one pair of markers at the current cursor position. If the vertex is moved the tape measure read-out will be updated. The Protractor is used in much the same way, but it measures angles and not distances.

Grid Tool, which provides a three dimensional grid, is of great help. Grid size can be set and configured to suit your needs. You can even use your own measurement systems.

The only major fault with 4D – and, honestly, it's not that major – is the lack of texture mapping.

Sculpt 4D is much smoother and faster than earlier versions. Even in its standard 68000 mode the improvement is noticeable. Though, as to be expected, the '020 version is more productive. The tools have been improved and, as mentioned earlier, there are a lot of useful new utilities.

But the question has to be asked: who is going to buy it when it's priced over £350. Certainly not the casual user. If take 3D design seriously and require high performance regularly then 4D has got to be the one. It's a first class product from the object editor to the animation side of the software. Universities and professional animators are guaranteed to enjoy Sculpt 4D.

ANIMATION ON A SHOESTRING

Not everyone has £300 or more to spend on an animation package. Here are some alternatives and where you can get hold of them:

TURBO SILVER combines object editing and animation. The object editor is very weak and does not have the flexibility of 4D. Very fast raytrace times are claimed though. The program provides texture mapping and a refraction index mode. It also boasts a terrain module. Impulse/HB Marketing on 0895 444433 sell it for £139.95.

VIDEOSCAPE 3D doesn't provide raytracing facilities, but does support HAM and halfbright modes. Pleasing results can be produced reasonably easily. With Modeller 3D you can create object, camera, and motion files. Videoscape really shines when used with Modeller. It's available from Aegis/HB Marketing for £147.20.

ANIMATOR'S APPRENTICE is a Disney-style animation package that doesn't use triangles to create objects. You could quite easily create Roger Rabbit and animate him. Try that with 4D. The character is created, an action defined and then direction and rehearsal are added. It's obtainable from Hash Enterprises/Amiga Centre Scotland (031-557 4242) at £195.

FORMS IN FLIGHT 2 is another 2D/3D animation package. This package supports hierarchical animation, phong shading, texture mapping and IFF support of backgrounds and foregrounds. FIF is excellent value for money and is a great way to get into 3D animation. It costs £79 from the Amiga Centre Scotland.

PHONGY STUFF

Phongian shading is a method of smoothing curved surfaces visually on screen using ray tracing. It was the first really clever algorithm to tackle this shading problem, and was devised by a Japanese mathematician, Dr Phong Bui-Tuong, circa 1975. Phongian shading isn't 100% successful as the very top edges of the sphere or cone are flattened. Another popular method of sphere shading was produced H Gourand around 1971. Each method has its good points and bad points – it seems the perfect filling routine would be a combination of the two techniques.

OBJECT DISKS

Byte by Byte of Arboretum Piaza II, Suite 150, 9442 Capital of Texas Highway N, Austin, TX 78759 in the States sell several disks full of object data. For instance, there's the Orbiter/Space Station set which allows you to create your own shuttle scenarios. A whole range of objects disks are planned which might be distributed in this country by the Amiga Centre Scotland (031-557 4242).

for

- **Object editor is fantastic**
- **Rendering range good**
- **Support for Amiga 68020 accelerator boards**
- **Comparable to £50K package**

against

- **No texture mapping (wrapping pictures around balls)**
- **No refraction index for ray tracing work**

features
0 1 2 3 4 5

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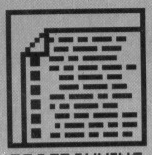


PROGRAMMING

SCREEN TRICKS

If you want to write a Starglider II beater, then you'd better pay attention. RICHARD MONTEIRO and JASON HOLBORN provide you with all you need to know on how the ST's and Amiga's screens work, plus loads of tips and tricks. Not to be missed.

Alongside high processing speeds and large memory configurations, the most fascinating aspects of the ST and Amiga computers are their spectacular graphics capabilities. At its highest resolution, the ST can display 640 by 400 pixels. Only two colours – black and white – can be used, but that's all you need for word processing, DTP and CAD. The ST also has two colour modes: medium resolution (640 by 200 dots) which can display four colours on screen and low resolution (320 by 200) which manages 16 colours. A glorious palette of 512 colours is available.

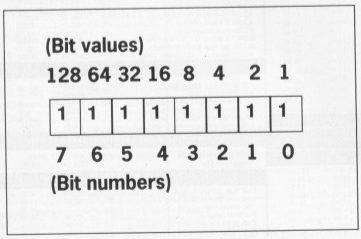
The most common resolutions on a PAL Amiga are 320 by 256 pixels and 320 by 512 pixels with up to 32 colours on screen. If you have the number of on-screen colours, you can have resolutions of 640 by 256 pixels and 640 by 512 pixels. Extra modes such as overscan, extra halfbrite and hold and modify (HAM) are also supported, but the actual mechanics are too complicated to cover in these pages.

A screen on the Amiga is built up using a system similar to that used by the Atari ST – namely by using bit planes. However, unlike the ST, the Amiga programmer is able to specify how many bit planes are used by a specific screen. The number of bit planes allocated to a screen dictates the number of colours available. For example, a single bit plane screen has two colours whereas a five bit plane screen allows a maximum of 32 colours. The equation is simple: 2 to the power of the number of bit planes equals colours available.

BINARY COUNTING SYSTEM

Data of any kind which is stored in a single memory address is referred to as a binary byte, and can be represented by any number between 0 and 255.

Each of the eight digits in a byte is termed a bit. Each bit in a binary byte can be either 0 – in which case it has no value – or 1 (its value depends on its position within the byte). If the bit to the extreme right of the byte (LSB or least significant bit) is set to 1 then it has the value one. A set bit in the second position has the value 2, the next 4, and so on through 8, 16, 32, 64 and finally 128 (the most significant bit, or MSB).



The total value of a byte can be found by adding the individual values of the set bits. For instance, binary 10110011 equals 179 (128+32+16+2+1) in decimal.

ST SCREENS

The amount of memory used for an ST screen display remains constant no matter what resolution you're in. This seems reasonable because high resolutions have little colour and low resolutions have lots of colour. You should have guessed by now that both colour and resolution determine screen memory requirements. The equation is: resolution times colour equals memory.

Reduce the resolution and you can increase the amount of colour. The opposite is just as true. In theory this is possible, but as you know in practice only three ST resolutions exist.

Total screen memory requirements on the ST amount to 32k. The way screen memory is organised isn't immediately obvious; resolution is fairly easy to handle, but all sorts of complications arise when colour arrives on the scene.

High resolution

Immediately after turning the ST on, an area of 32K is initialised at the upper memory border. The memory address starts at &H78000 (491520) on a 520, &HF8000 (1015808) on a 1040 and &H1F8000 (2064384) on a Mega 2. Check the panel for more details on this.

High resolution mode is the easiest to deal with: it only has one bit plane. This simply means that colours cannot be represented on screen. A pixel can only be black or white (on or off). Each pixel in this mode is represented by one bit. Hence each byte looks after eight pixels. It's not hard to work out that the total memory used, in bits, comes to 256,000 (640 multiplied by 400). Exactly 80 bytes are required to display one horizontal line of screen information in this mode.

To plot a single pixel – say the first pixel at the start of screen memory – you must use something like `POKE a,128` (or `POKE a,&X10000000`), where `a` refers to the start of screen memory. If you want to plot a pixel one position to the right of the extreme left, use `POKE a,64`. To plot a pixel another place to the right you must use `POKE a,32`. Check the panel on the binary counting system if you can't see how this works.

Poking memory location `a+1` with 128 (or decimal &X10000000) plots the ninth pixel on the top row of the screen. The following short BASIC snippet starts by plotting a pixel at the top left of the screen; the pixel slowly travels across the screen. See if you can follow the logic (high res only):

```
'High res only
scraddr=LPEEK(&H44E)
FOR line=0 TO 79*400
FOR t=7 TO 0 STEP -1
POKE scraddr+line,(2^T)
PAUSE 1
NEXT t
POKE scraddr+line,0
NEXT line
```

Medium resolution

From now on things get a lot trickier. Two bits are used to determine what colour the pixel on screen assumes. Such a system is said to have two bit planes. Things get complicated in this mode: memory isn't arranged as expected and colours are determined by pixel combinations.

Memory matters first. The first and third screen bytes look after the first eight pixels, the second and fourth bytes look after the second eight pixels, the fifth and seventh bytes look after the third eight pixels...

Each pixel has two bits associated to it; two bits can be arranged in four combinations (hence four colours are permissible in this mode). The BASIC program below demonstrates the effects on a pixel by setting bits in two bit planes.

```
'Med res only
Scraddr=Lpeek(&H44E)
Col1=Int(Rnd*2)
Col2=Int(Rnd*2)
For T=0 To 7
If Col1=1
Col1=255
Endif
If Col2=1
Col2=255
Endif
Poke Scraddr+(160*T),Col1
Poke Scraddr+2+(160*T),Col2
Next T
```

Low resolution

If you thought medium resolution was a pain, you ain't seen nothin' yet. Low resolution has four bit planes which means four bits are used to determine the colour of one pixel. And the way memory is arranged is even more confusing.

The first, third, fifth and seventh screen bytes look after the first eight pixels; the second, fourth, sixth and eight bytes look after the second eight pixels. Four bits – which make up one pixel in low res – can be arranged in 16 combinations (or colours). Armed with the knowledge that bits can be on or off, 1 or 0, here are the possible combinations. Assume the bits are labelled A, B, C and D:

```
bit: A B C D    A B C D
i    0 0 0 0    1 0 0 1
t    0 0 0 1    1 0 1 1
     0 0 1 1    1 1 0 1
v    0 1 1 1    0 1 1 0
a    1 1 1 1    0 1 0 0
l    1 1 1 0    0 0 1 0
u    1 1 0 0    1 0 1 0
e    1 0 0 0    0 1 0 1
```

HUNTING FOR THE SCREEN

The ST's screen isn't fixed in memory – that is, it can move about without upsetting the system – but on power up you are guaranteed to find it in a certain place. Whether this holds true with machines housing TOS V2 ROMs remains to be seen. When an ST is powered up you can find the start of screen memory at location &H78000 on a 520 and location &HF8000 on a 1040.

On most occasions you'll be safe using the memory locations mentioned above. However, to make absolutely sure of the screen's position in memory, you should use a GEM call which returns the screen location.

There are several ways of going about this. The illegal way is to do a longword PEEK at location &H44E (memory around here is reserved for system variables – so be careful). If you use GFA BASIC, for instance, you could use `scraddr=LPEEK(&H44E)`. Most versions of BASIC allow you to call GEM routines or have commands to emulate ROM routines. Sticking with GFA you could use `scraddr=XBIOS(2)`. Assembly language programmers can call the routine *physbase* to return the base of physical screen RAM in register D0:

```
move #2,-(sp)
trap #14
addq.l #2,sp
```

The program below goes to prove just how much work is involved in plotting a block (eight by eight) of pixels in a random colour at a random location. This type of operation is useless when programmed using a high level language due to the vast amount of processor time consumed. Only assembly language users will gain any noticeable benefit from accessing the screen directly.

```
'Low res only
Dim A(3)
For Blob=1 To 50
For T=0 To 3
If Int((Rnd)+0.5)=1
A(T)=255
Else
A(T)=0
Endif
Next T
Scraddr=Lpeek(&H44E)+Int((Rn
d*30000)/8)*8
Scraddr1=Scraddr
For T=0 To 7
For B=0 To 3
Poke Scraddr1,A(B)
Scraddr1=Scraddr1+2
Next B
Scraddr1=(T*160)+Scraddr
Next T
Next Blob
```

AMIGA SCREENS

Each bit within a single bit plane can only have two states, 1 or 0, therefore to use more than two colours within a screen the system works out the value of the pixel by combining bit planes. This is best viewed as a binary number, where each digit within the number represents a single bit plane. For example:

BP4	BP3	BP2	BP1
1	0	1	1

= Colour Number 11

In the above example, bit planes 4, 2 and 1 are all set to one while bit plane 3 is set to zero. Looking at the

ST SCREEN TRICKS

Two 8-bit video display registers located at &HFF8201 and &HFF8202 dictate where the screen lies in memory. All sorts of things are possible when you start POKEing around:

```
For I%=0 To 15
Deffill I%+1
Pbox 0,I%*20,319,199
Next I%
V=Peek(&HFF8203)
For A=1 To 10
For T=8 To 128 Step 10
Pause 1
Spoke &HFF8203,T
Next T
For T=128 To 8 Step -10
Pause 3
Spoke &HFF8203,T
Next T
Next A
Spoke &HFF8203,V
```

CHANGING PIXEL COLOUR

The lowest ST resolution can cope with 16 different colours on screen at once. These 16 colours can be chosen from a 512-colour palette. Imagine you've got 16 pens (numbered 0 to 15); each pen can be filled with any ink (of which there are 512 to pick from).

BASIC has several commands to do all the hard work for you. Indeed, even if you use assembler, GEM is littered with commands for altering pen inks. For speedy colour changes, though, your best bet is to hit the hardware direct. You can do this by reading or writing to the video the colour register. There are 16 word (or double byte) registers starting from location &HFF8240. It is only possible to access these registers in supervisor mode. Any access in user mode results in a bus error. Location &HFF8240 looks after the ink in pen 0, location &HFF8242 looks after the ink in pen 1 and so on up to location &HFF825E which looks after the ink in pen 15.

For instance, to change the background colour (pen 0) you might use the BASIC command `SDPOKE &HFF8240,value`. The variable `value` takes the form:

```
bit:   FEDCBA9876543210
       &X-----RRR-GGG-BBB
```

where the R bits determine how much red is in the final colour, the G bits how much green is in the final colour and the B bits how much blue is in the final colour. Hence `POKE SDPOKE &HFF8240, &X0000011100000000` would give you a deep red background.

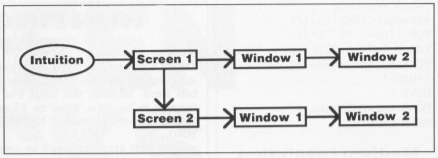
The program below shows how it's done:

```
  Low res only
For I%=0 To 15
Deffill I%
Pbox I%*20,15,320,199
Next I%
For A=0 To 15
Print At(1,1);"Altering colour register ";A
For T=0 To 2048
Sdpoke &HFF8240+(A*2),T
Next T
Sdpoke &HFF8240+(A*2),Int(Rnd*2049)
Next A
Sdpoke &HFF8240,&X11101110111
Sdpoke &HFF825E,&X11100000000
```

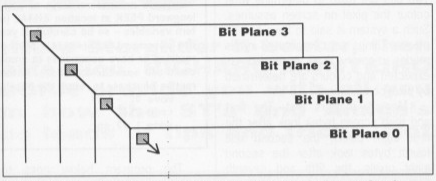
bit planes individually doesn't tell you a great deal, but if you combine them as a binary number the colour value of the pixel can be ascertained. This explains why all pixels of a particular colour are changed when you alter the value of their colour register. Bit planes cannot tell you the colour of an individual pixel, only the colour register number that that particular pixel will fetch its colour information from.

The Amiga's screen memory is dynamically allocated as and when it is needed. The only certainty with screen memory is that it is always somewhere within the first 512k of RAM. So how do you keep track of your screens and Windows? Pointers of course.

The Amiga uses two types of pointer for screens and windows. The ViewPort is a pointer to a screen and a RasterPort is a pointer to a window. Two types of pointer are required as windows are always displayed within a screen. While it is perfectly possible to open a screen with no windows, it is impossible to open a window with no screen. All the screens and windows are linked using a linked list.



■ *Figure 1 – How the Amiga's 'Intuition' views a screen with two windows.*



■ *Figure 2 – Think about bit planes this way and you may be less confused.*

For example, if you have two open screens that each have two windows within them, Intuition (the Amiga's WIMP system) would view them as in figure 1 above.

All drawing functions within the ROM Kernel need to be told what screen or window they are to work in. The most common pointer used is the RastPort pointer as all windows and screens must have one. All the following examples are written in Amiga BASIC; the theory is exactly the same for most other languages such as C and Assembler.

Poking points

The simplest, and most legal, way of writing a single pixel to the screen is to call the ROM Kernel function `WritePixel()`. Like all drawing functions within the ROM Kernel, WritePixel needs to be told where to write the pixel. In this case a RastPort pointer is required. In AmigaBASIC this is easily found by reading the value using the WINDOW command. The value returned is 32-bit which means the variable that holds it must be declared as long. This is done by attaching '&' to the end of the variable name. The RastPort address can be read using the following:

```
RastPort& = WINDOW(8).
```

You can now write directly to the window using the ROM Kernel functions. The following Amiga BASIC program will write dots randomly on the screen:

```
LIBRARY "graphics.library"
SCREEN 1,640,255,2,2
WINDOW 2,"Dotty Window",,0,1
COLOR 3,0
RastPort& = WINDOW(8)
FOR count = 1 TO 1000
x = INT(RND*620)
y = INT(RND*250)
CALL WritePixel&( RastPort&,
x,y )
NEXT count
LIBRARY CLOSE
```

GETTING IFFY

One nice feature of the Amiga is its standardised file format called IFF. IFF covers nearly all types of data files ranging from picture files and animations to text and sampled sound.

The actual structure of IFF files unfortunately is rather too complex to cover completely within these pages (look out for that in a future issue of *Format*!) so we'll only look at how IFF ILBM (InterLeaved Bit Map – picture files to you and me) files hold the actual colour information of a picture.

All the various bits of information needed to construct a picture are held in specific *chunks*. The advantage of this system is its expandability. The IFF ILBM file in particular has been updated several times since it was first adopted, but still remains compatible with the original version. Each chunk within an IFF file has a four byte header containing the name of the Chunk. If you view an IFF file as a hex dump then you'll be able to spot these chunk headers easily as they are English text bytes.

The chunk that holds a picture's colour is called the *Colour Map* and has a chunk header called CMAP. Reading the colour information is therefore only a matter of searching for the string 'CMAP' within an IFF file. The actual colour map chunk is made up as follows:

4 Bytes Chunk Header 'CMAP'
4 Bytes Chunk Length
1 Byte Red value of colour 0
1 Byte Green value of colour 0
1 Byte Blue value of colour 0
1 Byte Red value of colour 1... etc.

The three bytes holding the red, green and blue information need to be read to find the colour contained in a particular colour register. The next step is to divide each by sixteen. The reason for this is that only the last four bits of a byte are used, the first four must be ignored.

The program below shows a simple method of changing the value of a colour within a picture file. The program allows you to change the value of the background colour (colour 0) and then have the results written to a separate file. The program takes a rather long time to read the entire IFF file so don't worry if your Amiga seems to be taking an age to finish:

```
CHDIR "Extras:BASICDEMOS/"
InFilename$ = "Heart.ILBM"
OutFilename$ = "Heart.PIC"
OPEN InFilename$ FOR INPUT AS #1
OPEN OutFilename$ FOR OUTPUT AS #2
INPUT "PLEASE ENTER RED VALUE (0-15) ",
   Red%
INPUT "PLEASE ENTER GREEN VALUE (0-15)
   ", Green%
INPUT "PLEASE ENTER BLUE VALUE (0-15)
   ", Blue%
FoundCMAP = 0
Chunk$ = "ZZZZ"
WHILE NOT EOF(1)
Char$ = INPUT$(1,1)
GOSUB CheckChar
WEND
IF FoundCMAP = 0 THEN
PRINT "Couldn't Find Colour Map"
ELSE
PRINT "Ok, Job Done."
END IF
CLOSE 1
CLOSE 2
END
CheckChar:
Chunk$ = Chunk$ + Char$
Chunk$ = RIGHT$(Chunk$,4)
IF Chunk$ = "CMAP" THEN
FoundCMAP = 1
PRINT #2, Char$;
GOSUB UpDateColourMap
END IF
PRINT #2, Char$;
RETURN
UpDateColourMap:
Char$ = INPUT$(4,1)
PRINT #2, Char$;
Char$ = INPUT$(3,1)
Char$ = CHR$(Red%*16) + CHR$(Green%*16)
   + CHR$(Blue%*16)
RETURN
```

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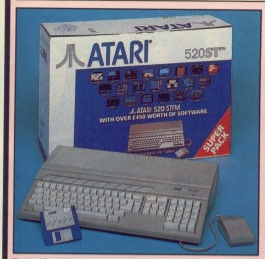

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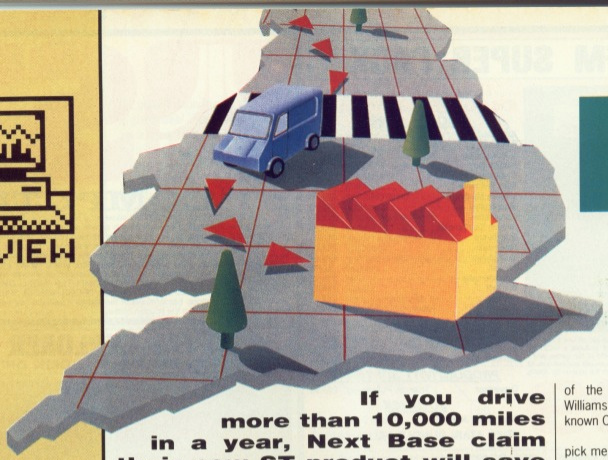


ROU
AR

If you drive more than 10,000 miles in a year, Next Base claim their new ST product will save you quite a few pounds. SIMON WILLIAMS, no mean achiever in the mileage stakes, maps out his progress.

£149.50 ■ ST only, all models ■ Next Base, Unit 18, Central Trading Estate, Staines, Middx TW18 4XE (0784 60077)

Autoroute can claim to be a unique product. It's purpose is to work out the best routes between any two places in Great Britain and provide detailed directions for driving from one to the other. In addition, it can display and print a map of the suggested routes and zoom in on any area of the country. You can identify cities, towns villages and roads on what is effectively an electronic map.

The program is supplied on three single-sided disks, with a slim but comprehensive manual and a registration card. Two of the supplied master disks contain the digital map data, while the other contains the program and is keyed as a form of protection. This means that even if the program is installed on a hard disk, the floppy still has to be used to start Autoroute. Although Next Base offer to replace a damaged program disk for a 'nominal fee', it's still annoying to have to use the master each time the program's run.

The map data can be combined onto one disk if you have a machine with a double-sided drive, and the program then requires no disk-swaps while running. On a 1 Mb ST or above, the map data is loaded and run from memory, which speeds things up considerably. Autoroute automatically senses the machine and drive configurations, and installation on all machines is well explained in the excellently written manual. Although only a thin booklet, it is full of illustrations and written in an informative style which never patronises.

■ *Details of a particularly onerous journey*

Naming of paths

The program runs under GEM and starts with an unprepossessing blank screen and four pull down menus. The Desk menu shows the credits, and it's interesting to note that parts of the code are copyright Mark Williams, author of one of the best known C compilers on the ST.

The Options menu lets you pick measurement units (miles or kilometres), type of route (shortest, quickest, cheapest etc) and one of five typical vehicles. The type of vehicle is in fact a shorthand for your own speeds, as each of the headings (2CV, normal, rush hour, GTi and HGV) corresponds to a set of speeds on different types of road. These can be edited separately from the Journey menu and saved from the Actions menu.

The Journey menu provides most of the meat in specifying your actual route. Journey Details calls up a separate window where you can specify starting point and destination, up to four places to visit (with optional stop-over times), four places to avoid (including nasty road junctions) and a required departure or arrival time. These times are significant when it comes to printing out your directions, as Autoroute will supply a timetable working forward from departure or backwards from arrival.

The Road Preferences menu lets you declare any strong likes or dislikes for Motorways, A roads, B roads and changes of road. These preferences can dramatically effect the routes the program selects. The Speed Set window displays the speed attributed to each of the five sample vehicles in the Options menu.

The third menu, Actions, is where the work is done. Calculate sets the program searching for the routes you've requested, Route Text displays detailed directions for any of these routes, Route Map displays a scaled map with the routes marked on it and Print route prints directions.

There and back again

So much for the theory. Having entered several typical journeys, it was impressive to watch the speed with which Autoroute calculated each route. Even on a 520ST with a long route (Lands End to John O'Groats) each route was found in well under a

MAINLAND ONLY

Autoroute claims to cover all roads in Great Britain. This means, sadly, that roads in Northern Ireland and the Channel Islands are not included. By rights, it should also mean that the Isle of Man is excluded but, in fact, you can start from any village or town on the island, and the program will also include the ferry crossing.

Talking of ferries, the time for crossings is included in journey suggestions, but any waiting times or special cases (e.g. no Sunday sailings) are not taken into account.

OS SENSE

Autoroute is the first software package designed to make use of the Ordnance Survey's digital map data. The government body which started life mapping the country for the military was told some years back to start making money. It hit upon the clever idea of marketing its map data in digital form (the way it currently stores it itself).

Next Base licensed the maps from the OS and had to download them from the reels of magnetic tape on which they were supplied, onto many floppy disks. The next stage was to integrate the maps into the program itself, tying the data in with the search algorithms. Finally the data had to be heavily compressed to reach Next Base's target of running the program on a single drive PC, and hence 520 ST.

The way the maps have been tied in means that new versions can be integrated just as easily, so that *Autoroute* can be kept up to date with the latest versions of OS maps.

UTING ROUND

minute. There's a bar indicator to show how the calculation's progressing – a nice piece of user friendliness showing how long you've got left to wait – and each route in a multiple-route calculation is displayed as soon as it's found, with its time and distance. You can interrupt calculations at any stage.

Once complete, the main screen blanks to the menu bar again and you can select any of the other options from the Actions menu. The most interesting of these is Route Map. A fresh screen shows a scaled section of the British map with start and destination points marked and the suggested routes flashing between them. Roads and places not directly *en route* can be displayed by clicking on the dots and lines on the map, and areas of the map can be enlarged from a minimum scale of 450 miles for half a window width to a maximum scale of 1 mile. It's a pity the whole screen couldn't be used for this display, with the control panel popping up over the top when needed.

Taking advice

What about the recommended routes? Any program like this brings out the worst in motoring dogma. It certainly created more interest around the office than any program since *MacPlaymate* (don't ask what that one does!). Everybody wanted to try out their own best loved routes, and most pooh-poohed the suggestions provided by *Autoroute*. There was genuine disbelief that some of the suggested routes were quicker, shorter or cheaper than the routes chosen from experience by the regular drivers among us. On longer hauls the routes were generally much more believable, either because the long distance information is more accurate or because nobody new the journeys as well as the local ones. There was no time to test the suggestions for the Land's End to John O'Groats route!

The other problem with the program was the general optimism in the suggested journey times. While all the road speeds are within current speed limits, the 'average' times assumed driving at those limits. Since you spend a fair bit of time in traffic jams, to average 70mph on a motorway you'll need to cruise at a highly illegal 90 to meet Autoroute's times. That said, it's only a matter of moments to tailor the speeds to those you think you can achieve safely.

Going the distance

Once you've tailored the package to your own speeds and requirements you can get sensible help from it. A set of printed directions is a lot easier to follow than a map, particularly if you're on your own and need to stop each time to consult it. The facility to pick shortest, quickest or cheapest routes means you can obtain the maximum advantage from the program's suggestions. Next Base offers a maintenance contract for £34.50 per year, which provides an update of the map data taking in any new or altered roads.

Taking the price into account, Autoroute is unlikely to find its way into many home user libraries. It's main attraction must be to professionals, who can offset the price of the program against the savings it can make in fuel costs. The obvious markets are travelling salesmen, lorry drivers (and their employers), itinerant executives and journalists. It's a very well designed package and deserves to sell well in the niches at which its aimed.

JOINING THE DOTS

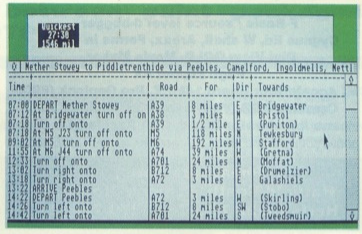
When you stop and think about it, how would you set about determining the shortest route between two points on a map? Your first thought might be to work from one point, taking a bearing on the other and picking the road nearest to that bearing. A little more thought, though, will lead you to several flaws in this technique. The most obvious is that you might miss a much faster or more direct road which happens to leave your starting point in an odd direction.

In fact, *Autoroute* **uses a combination of two techniques, which can generally be termed 'ink blot' and 'all combinations'. The 'ink blot' technique begins at the starting point and moves out equally on all available roads until the destination is reached. All routes which haven't reached the destination are then discarded.**

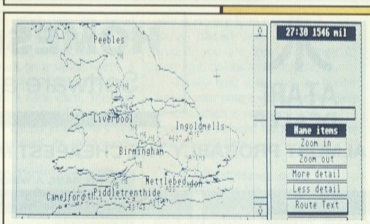
The 'all combinations' method scans all roads and combinations of roads looking for the start and destination places on them. It again eliminates any roads which don't meet these conditions.

IN CAMRA

A blatant omission noted by several members of the *Format* **team was** *Autoroute's* **lack of a 'boozi-est' route option, covering the most pubs between any two places. Next Base couldn't comment on any possible tie up with CAMRA or Egon Ronay for digitised pub data.**


Untitled
27:30
1546 nil
Q1 Mether Stovey to Piddletrenthide via Peebles, Camelford, Ingoldmells, Mettl
Time | Road | For | Dir | Towards
07:00 DEPART Mether Stovey | A39 | 8 miles | E | Bridgewater
07:12 At Bridgewater turn off on | A38 | 3 miles | N | Bristol
07:28 Turn off onto | A39 | 1/2 mile | E | (Puriton)
07:30 At M5 J23 turn off onto | M5 | 118 miles | N | Tewkesbury
09:02 At M5 turn off onto | M6 | 192 miles | W | Stafford
11:25 At M6 J44 turn off onto | A74 | 39 miles | W | (Gretna)
12:33 Turn off onto | A701 | 24 miles | N | (Moffat)
13:03 Turn right onto | B712 | 8 miles | E | (Drumelzier)
13:18 Turn right onto | A72 | 5 miles | E | Galashiels
13:22 ARRIVE Peebles
14:22 DEPART Peebles
14:28 Turn left onto | A72 | 3 miles | W | (Skirling)
14:42 Turn left onto | B712 | 6 miles | SW | (Stobo)
14:47 Turn left onto | A701 | 24 miles | S | (Tweedsmuir)

■ *Part of* Autoroute's *directions for the quickest route*



■ Autoroute's *map of the various suggested roads*

for

- Complete electronic map of Great Britain
- Can be customised to your own speeds and road preferences
- Adjusts itself to get the most from any ST configuration

against

- Map screen could be bigger
- Default speeds over-optimistic

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

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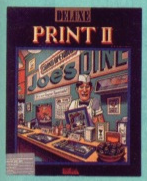
GRAPHICS

DELUXE PRINT II



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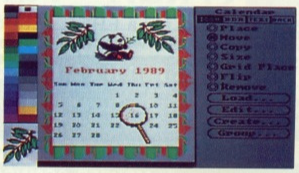
Art packages are wonderful things... but while they're great for painting pixels, they're usually pretty weak on adding text to your creations. BEN TAYLOR colours in the grey area between paint packages and DTP.

Deluxe Print II sets out to help you create colourful signs and posters on your Amiga – as such you can think of it as a fine-tuning stage for a paint package. A typical scenario would be this: you decide you want a poster advertising your Valentine's Day Barn Dance. Using your paint package, you can draw all the discrete parts that will eventually be used: a straw-filled barn scene, a few love-hearts, and a miniature Cilla Black *(whatever turns you on – Ed)*. You save all the elements individually and then compose them with Deluxe Print II.



■ *Making up a calendar in DPrint II. The text for the dates was automatically calculated by the program after being told the month and year. Other graphics were then superimposed. The bamboo leaf clusters are the same icons, one being reflected.*

When you start, you are faced with a blank work area filling the left half of the screen. You can choose whether to work on a single sheet, a 'banner' (2 sheets placed end-to-end), a disk label or a 4-tile card. This last format sets up a page of four panels so that when folded in quarters you get a greetings card. An extra handy format is 'Calendar' – a page preset with the dates of any month you specify.

■ *Some of the poster-size fonts supplied with Deluxe Print II*

Deluxe Print's main area of interest is that it provides good text fonts suitable for use in large posters. Curiously the fonts are called *Carmela*, *Patricia*, *Iva* and *Deborah* – there must be a story behind that. Characters up to two inches high with no jagged edges are possible; larger than that and the edges don't look so smooth. You only type one line of text at a time onto your poster. Fine for headlines, but if you want any small print it is very time consuming. Once you've placed text on your background, you are free to change its size, font, colour and position.

Finally you can set a border around your image – this is effectively an icon which is repeated and printed around the outside, so you can frame your composition.

Putting out

Once you've got the various elements just right, you can print your masterpiece. Mystifyingly, the printer drivers supplied are based on the obsolete version 1.2 set; there is no support for the HP Paintjet colour printer, nor any 24 pin dot matrix. (It's true you *can* copy other drivers onto your boot disk, but the manual doesn't give any clues.)

It is only possible to view the page in its entirety on screen – very annoying as everything is about 40% of actual size. You can zoom in for pixel-perfect positioning, but you can't do any editing unless you return to the full-page view.

Deluxe Print II is a most unambitious program. You can't flow text around graphics; you can't rotate text; you can only usefully work with imported pre-prepared graphics. It offers little you couldn't do with a good paint package and a selection of public domain fancy fonts.

OBJECT LESSON

There are four types of objects you can put on a page: icons, text, borders and backgrounds. The background is simply an image that you've previously prepared in a paint package. 'Icons' are what Deluxe Print calls its basic graphic elements. An Art disk provides you with a fair variety of clip-art, but it tends to be a little off-beat. Robins, penguins, slices of Mom's Apple Pie... You can place any of these on your background, or import ones you've prepared elsewhere. Icons are always 44 by 52 pixels, although they can be rescaled once in place.

The difference between Deluxe Print and a standard paint package is that the icons are stored as discrete objects. In other words, if you place an icon over a background, the covered background will reappear if you move the icon later on. This is particularly useful for text.

features 0 1 2 3 4 5

performance 0 1 2 3 4 5

ease of use 0 1 2 3 4 5

manuals 0 1 2 3 4 5

format value 0 1 2 3 4 5

for

- Automatic calendar generation
- Good range of large text fonts
- Text/graphics stored as 'objects' for easy modification

against

- Doesn't directly support 24-pin printers or HP Paintjet
- Can't edit in full-size view
- No paint-package type pixel editing tools
- Nothing a good paint package can't do

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DESKTOP

When the frost sets in and your ST starts to shiver then there's only one thing for you to do – stumble down to the Format saloon for all the latest tricks and tips to keep your ST warm through the winter weeks. This month's winner is R. Henderson from Liverpool for his STAC tips. £30 will be on its way once we find the editor's wallet.

TIPS

Stand-alone STOS

Users of STOS BASIC will find that they cannot make stand-alone .PRG programs but there is a way around this problem.

1) Copy the STOS folder from your Language Disk onto another disk using the desktop copying procedure (do not use the STOSCOPY accessory).

2) In this new folder delete the files COMPACT.EXA and EDITOR.ENV to save space. Performing this operation will cause the standard Desktop colours to be used in your program.

3) Save your program with a .PRG extension from the Editor in the normal way.

You can now execute .PRG files from the Desktop.

Also, if you want to boot from drive B then type in `POKE 1094,1` and press the reset button.

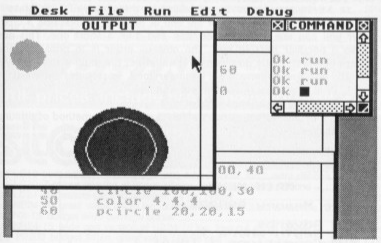
Fil Shore
Hitchin, Hertfordshire.

STOS
The Game Creator
Written by F Lionet & C Sotiropoulos

BEGINNER'S CORNER

Back in the good old days when all you had to do was turn on your Dragon 32 and up popped Microsoft BASIC (*those aren't the old days – Ed*), programming your machine was almost as easy as pulling the hairs out of your left nostril. Then suddenly some bright spark comes up with the idea of making a 16-bit machine which can be used to play some brilliant games and boasts a *really* powerful BASIC. Now this would be fine if they didn't make it so complicated that you need a degree in BioBASIC just to understand how to load up the program.

ST BASIC comes bundled with your ST and although you might not be able to write *Starglider II* on it, it's still a fairly powerful language. It's windows are considered by many to be one of its best features especially when it comes to sorting out what's gone wrong with your programs. But what makes ST BASIC useful is also its major disadvantage. The windows are notoriously difficult to master. With four windows assigned to editing, listing, outputting and command line entry, not only is it hard to get them all on screen at once but it's also damn near impossible to remember which one it is that you're supposed to be looking at.



WINDOW MANIPULATION

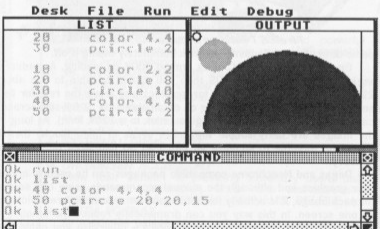
The COMMAND window is the one into which you type your program. It doesn't really need to be very tall so it's often a good idea to size it up as a wide but short window. As you enter your basic instructions these will appear in this window. When you want to see the program the next step is to list it out. Listing occurs in the LIST window. Often, placing this one above the command window so that you can see as much of your program as possible is a good idea.

Selecting EDIT causes the EDIT window to appear. All other windows which were in front of it will be sent behind this window, making it possible to see the relevant section of your program and move the cursor around for editing.

Finally, the output window responds to all directly-entered commands and handles all the output of your programs. This might seem confusing but by sizing up this box you can edit your program and view all the program output at the same time making it easy to see the necessary changes (assuming of course that your program doesn't run perfectly first time).

CONTROLLING WINDOWS

Each of the separate windows are allocated a different number. Window 0 is the EDIT window, 1 is the LIST window, 2 is the OUTPUT window and 3 is the COMMAND window. There might not seem to be much point to this but it comes in very handy when you want to clear a window. The CLEARW command when followed by a number from 0 to 3 will clear the corresponding window. This can often be useful when it comes to obtaining a clearer listing or if you are making use of the OUTPUT window.



Another command, the FULLW statement can be used, when followed by a number from 0 to 3 to increase the size of the specified window so that it takes up the full screen. This is often useful for looking at a listing or when you wish to run a program and be able to see the full screen in operation. Should you obliterate the COMMAND window with a full screen then it will reappear when you next type a character.

These commands can also be used in an ST BASIC program but since you can only display in the output window then there's not a lot of use in dealing with any window other than 2.

Mousey Business

The ST mouse is a boring creature really. A simple arrow head with no interesting features at all is the only thing on offer to ST BASIC users. But here's a program which can change the appearance of your mouse to make it far more interesting:

```
10 GEM_CONTRL(0)=78
20 GEM_CONTRL(1)=1
30 GEM_CONTRL(2)=1
40 GEM_CONTRL(3)=1
50 GEM_CONTRL(4)=0
60 GEM_INTIN(0)=n
70 GEMSYS
```

By allocating values of n from 0 to 8 you can change the mouse pointer to all sorts of different shapes from a satellite dish to the much-loved bee.

A. Kennedy
Dunblane, Perthshire

Making the most of BASIC

ST BASIC is a brilliant program but loading Degas and Neochrome pictures can be a real pain at times. However, there is a way to overcome this problem very simply.

On a 520, the ST BASIC screen resides at location $78000 (read this month's article on page 78 for the full story of screen handling) in memory so all you need to do is load your picture into this area, having subtracted the relevant amount of memory for the file header. Neochrome pictures have a header of 128 bytes whilst Degas pictures have a header of just 32 bytes. Therefore, to load a Neochrome picture onto the screen all you need to do is load your image into address $78000-$80. Remember to make sure that you only load low-res pictures onto low-res screens and medium-res onto medium-res screens otherwise you'll get all sorts of strange things appearing on your monitor.

Mary Shyster
Warlingham, Surrey.

WE'LL MAKE YOUR DAY

Yes, you lucky devils, Format, in its infinite generosity is offering you loadsaloot! And what do you have to do? Just a few lousy hints on making the most out of a software package, or a hardware modification or how to use the Desktop more efficiently or anything else that you might think will interest other ST users.

And what exactly do you get for this small task? Instant fame and and, if yours is the star tip, limitless wealth (well almost limitless – £30 to be precise). So come on fellow ST-ers, make the most of your page and rush lots of great tips to Desktop, ST/Amiga Format, 4 Queen Street, Bath BA1 1EJ.

File depression

Recovering files on the ST is a poorly understood process. Some people have proudly claimed that all you need to do is change the $2E value at the start of an erased file in the directory back to a code from 33 to 127 and it will magically appear. It may well rear its head in the directory but the contents won't look much like it did before. This is because entries in the FAT (File Allocation Table) will have been corrupted and these need to be restored. This can create untold problems for a long file which has been scattered around the disk in more pieces than a jigsaw puzzle.

However, do not fear – certain commercial packages are now available to remedy this problem. *Hisoft's* UNDEL program can be used to accuarately recover files. It works by taking an intelligent look at the FAT table and deciding where the file exists by calculating the unused areas of disk space. The effect is that even partial programs can be retrieved.

J. Railton,
Cherry Wilingham, Lincoln.

WELL STAC ME!

STAC is not exactly the most well-documented of game-creators – at times the manual almost borders on the ridiculous with its many faults.

One of the first things you should do is to set the write-protect tabs on the Demo disc so that you can't write to this disk. If you run the STAC

demo direct from the master you risk completely wiping it off.

On a 1.8 TOS ST, STAC gives around 300K on loading. Assuming it works with all versions of TOS then you should be able to use about 290K of this. Use about 120K for graphics and leave the rest for text and game mechanics. Depending on detail about 10-12 full-size screens can be held in memory (assuming you stick to a 120K limit). As long as the images are fairly simple with large areas of filled blocks then it should be possible to squeeze as much as 30 half-sized pictures into memory.

Degas and Neochrome compatible packages can be used to create your graphics and although the manual recommends using one screen for each image, it is actually far better to draw several different pictures on one screen. In this way you can dramatically reduce the amount of disk space which is given over to graphics – otherwise you could find that you're using up to 10 disks by the time you have finished writing your game. Once in STAC you can cut out all the different areas of each screen which you want to use.

If you have a white background in the split-screen mode then the few pixels in the top of the screen will flicker. You can get around this by putting graphics in every location or changing the screen colours. Remember to clear the screen if you have a very long message to be printed (use: SPLIT SPLIT DRAW 0) otherwise most of the text will scroll off the top.

Also, to add extra atmosphere to your games it may be useful to put in a random message such as 'it starts to rain' or 'a cat runs past'. This can be done very simply with:

```
IF RANDOM10=1 AND RESET?=10 THEN SET 10
MESSAGE ("YOU SEE A PURPLE ARMADILLO") WAIT
```

This gives the message a one in ten chance of being printed and once done it will not be printed again.

```
IF AT 10 MESSAGE RANDOM 10 WAIT
```

This instruction will print a message if you are at location 10 and then wait for a new command. Combining these two instructions with:

```
IF AT 15 AND RANDOM 10=1 MESSAGE RANDOM 10 WAIT
```

gives a one in ten chance of a message between one and ten being printed at location fifteen. It's these sort of random commands which will make an adventure game far more interesting, so it's worth spending time including them.

HIGH PRIORITY QUIRK

This is a bit of an advanced one. To make a character appear all of the time you must use a high-priority condition such as:

```
IF AT 10 AND RESET?20 LF MESSAGE ("Red Coypu") LF WAIT.
```

The wait must always be at the end of the line. To describe a character you can use a long-description and then a short one. This can cause a peculiar parsing bug. The obvious order is to print the long description first. If you do this then it will affect the multi-statement system and only one command will be understood. To stop this you must:

1. Print short description without wait
2. Print long description without wait

This may also affect puzzles which use the same method of printing two messages.

R. HENDERSON
MERSEYSIDE

```
     -- MAIN MENU --
Free Memory 808027

 A  Adverbs
 B  Begin where ?
 C  Conditions ( local )
 D  Disk menu
 E  Font editor
 F  Graphics
 G  High priority conditions
 H  Low priority conditions
 I  Messages
 M  Nouns
 N  Objects
 O  Printer menu
 P  Room descriptions
 R  Special conditions
 S  Toggle screen resolution
 T  Verbs
 V  Erase adventure

 ENTER  Enter adventure

Please choose one of the above.
```

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WORK BENCH

TIPS

Another collection of handy tricks and tips to help get your Amiga over that New Year hangover. Word processing, painting, programming – if it ain't here it ain't worth knowing. Send in your Amiga tips and you could pocket £30! This month's lucky winner is Darren Taylor from Coventry.

Flushing Workbench

Life with a 512K Amiga can be a struggle to say the least. When you run a program from the Workbench, the free memory display before you loaded the program and after you have quitted never seems to quite tally. Where do those few extra bytes wander off to? All can be revealed....

The Amiga's memory is managed by the multi-tasking executive that maintains a list of free memory 'pools'. When you load a program into the Amiga, the program will require some form of workspace for storing its own data etc. To get this workspace memory, a program has to 'ask' the multi-tasking executive for the memory and if there's enough memory around EXEC assigns it to your program.

When you quit from a program, all this memory should be deallocated by the program itself. Deallocating involves your program telling the Amiga that it has finished with the memory and it can be reused by other programs. Many badly written programs often fail to properly release this memory and therefore the free memory count is never completely restored.

There is a way around this however. The Workbench program has an undocumented feature that allows you to force the unused workspace to be released. To access this feature you will have to firstly change the StartUp-Sequence of your boot disk. Once you are in a text editor, like the Amiga's own ED, search for the line that reads `LoadWB`. This line must then be modified to read

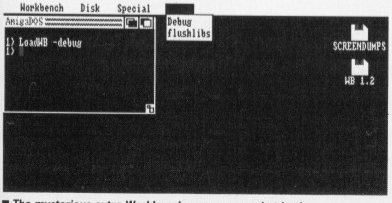
```
LoadWB -debug
```

When you now reset your Amiga, everything will appear to load as per usual. Looks can be deceptive however as hidden away in the Workbench menu bar is an extra pull down menu. To access it, hold the right mouse button down in the normal way and move the mouse pointer immediately to the right of the 'Special' menu – the extra menu will show iself. This extra menu will contain the following menu items:

```
Debug
Flush Libs
```

The first menu item, Debug, is strictly for software developers, don't select it or your Amiga will lock up. The menu item of real interest is the 'Flush Libs' option. If you select this, the Amiga will attempt to free any memory it can.

Spenser Gan
Milton Keynes



■ *The mysterious extra Workbench menu exposed at last!*

A FLOODY GOOD TIP!

One failing of the AmigaBASIC PAINT command is that it will continue filling the screen until is is completely surrounded by a boundary of a particular colour. This is not particulary useful if you are writing a program such as a paint package that requires only an area of a particular colour to be filled.

There is however a way around this. The AmigaBASIC Paint command calls the ROM Kernel function *Flood()*. This ROM Kernel function offers two different modes of operation. The first works in the same way as Paint, but the second is of more use as it only fills an area of a particular colour and then halts if it encounters pixels of a different colour.

The code to access this enhanced flood function is as follows:

```
LIBRARY "graphics.library"
X% = 200: Y% = 100: FillColor% = 2
FLOOD X%,Y%,FillColor%
LIBRARY CLOSE
END
```

```
SUB FLOOD(x-coord%, y-coord%, fill%)
STATIC
PSET (0,0),0
PAINT (0,0),0
RastPort% = WINDOW(8)
Mode% = 1
CALL Flood&( RastPort%, Mode%, x-
coord%, y-coord%)
END SUB
```

Before this program can work properly, ensure that the file GRAPHICS.BMAP is present within the current directory. This file can be found within the BasicDemos drawer on your Extras disk.

The variables, X% and Y% are the co-ordinates at which the fill starts and FillColor% as you may have guessed, holds the fill colour. The colour of the pixel at this position is used to specify which pixels are to be filled. For example, if the pixel at this point is red, only connected pixels that are also red will be filled.

Darren Taylor
Coventry

Protext secrets

Those of you who have read the review of Protext for the Amiga in this month's *Format* and have decided to take the plunge and treat yourself to this excellent Word Processor, may be interested to hear that hidden away within the depths of its code are several rather strange features.

The first, and probably most interesting feature is the Panic screen. At the Protext command line, type `PANIC` and press the return key for a rather strange effect.

The second peculiarity exists within the Protext help function. If you're using a single drive machine, you'll have to insert your dictionary disk first. Now type either `HELP LIFE` or `HELP`

ARNOR for some interesting messages.

Protext also features a powerful memory monitor that allows you to search through the Amiga's memory for those famous hidden messages. The monitor can be invoked by typing QWXCL followed by the address to be viewed. You can move through the Amiga's memory by using the Up and Down cursor keys. For an example, try entering QWXCL FC0050 and observe the ASCII dump on the right hand side of the screen.

Getting Scriptic

In last month's Workbench section you may remember a look at the extra facilities offered by the NewCLI command. Here's another hidden feature that can be very useful.

When you boot your Amiga with your Workbench disk, the first thing that happens is that a CLI window, entitled 'AmigaDOS' is opened and a batch file called STARTUP-SEQUENCE is executed. The NewCLI command allows you to carry out a similar procedure for every extra CLI window opened.

The NewCLI command offers an optional 'FROM' facility that is used to give the name of a batch file that is to be executed when the CLI is opened. For example, if you created a batch file called CLI-Startup in the S directory that did all kinds of wonderful things, you would enter the following command:

```
NEWCLI FROM S:CLI-STARTUP
```

The FROM option is particularly useful when NewCLI is used within a disk's StartUp-Sequence.

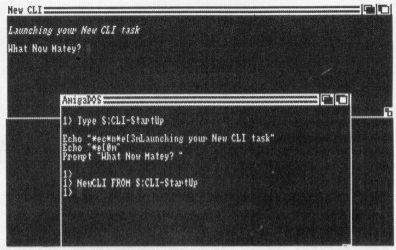
Sampling Sonix

Life with Aegis' Sonix music package is a pleasure for those of you who are lucky enough to have second drives connected to your Amigas, but for single drive users, using Sonix can be a problem. One particular trouble encountered by many crops up when trying to access sampled sounds from any disk other than the program disk.

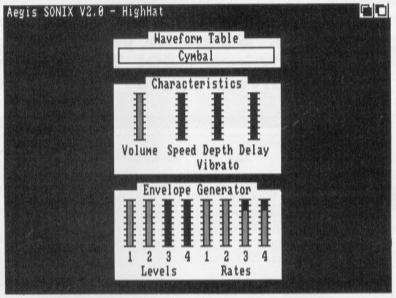
The problem lies in the way Sonix handles sampled sounds. Under Sonix, sampled instruments are composed of two files, a '.SS' file and a '.INSTR' file. When you load a sampled sound, Sonix also calls a sample handling module called SAMPLEDSOUND.TECH which is held in memory for only as long as sampled instruments are in use.

To use a sampled sound, you must first load an instrument of the same type from the main program disk, in this case, a sampled sound. Once this has successfully loaded, you can now remove the program disk and insert your sampled sounds disk. Your samples should now load with no problems.

Dave Collins
Salisbury



■ *Customise your CLI environment with ease*



■ *The sampled sound module within Sonix*

FANCY A WODGE OF DOSH?

How does thirty quid sound to you? By just sending us a useful tip, you could win a wodge of fivers! Interested? Well come on then, get those tips posted. We want tips of all kind: obscure CLI commands, cunning Kernel hacks, getting the most from your Database, the most efficient way of giving your Amiga an attack of the gurus....err, well perhaps not the last one but absolutely anything else. We want tips on EVERYTHING!

Still reading? Why haven't you loaded your Word processor or sharpened your pencils and started jotting down your pearls of wisdom? You want the address? Ok, here it is: WORKBENCH, ST AMIGA FORMAT, 4 QUEEN STREET, BATH, BA1 1EJ.

PIXEL PRINT

Yep, another cunning Kernel hint for all of you who use AmigaBASIC. If you use the AmigaBASIC commands LOCATE and PRINT to print text at various positions on the output window, you will have already realised that the LOCATE command only works on a character basis. Positioning text at an exact pixel position is not possible... until now that is.

The following snippet of code bypasses AmigaBASIC and calls the ROM Kernel graphics functions. The Amiga treats text like any other graphic and therefore text can easily be placed at any position on the screen by simply calling the graphics library function, Text(). The following code is written as a sub program and can therefore be easily incorporated into your own programs.

```
LIBRARY "graphics.library"
t$ = "Some Text" + CHR$(0)
x% = 321
y% = 134
colour% = 3
CALL PixelPrint(t$,x%,y%,colour%)
CALL PixelPrint(t$,x%+1,y%+1,colour%-1)
END

SUB PixelPrint(t$,x%,y%,colour%) STATIC
t% = LEN(t$)
RastPort& = WINDOW(8)
COLOR colour%
CALL SetDrMd&(RastPort&,0)
CALL Move&(RastPort&, x%,y%)
CALL Text&(RastPort&, SADD(t$), t%)
END SUB
```

As with all tips Kernellish(!), the program requires the appropriate .BMAP file. For the above program, the file GRAPHICS.BMAP must be present in the current directory. To use the program, the four variables, t$, X%, Y% and Colour% need to be initialised. t$ contains the actual text to be displayed, X% and Y% are the co-ordinates at which the text is to be drawn. Any guesses for Colour%?

AmigaBASIC's output screen is in medium resolution, so your pixel range is 0-639 across the screen and 0-255 vertically. If you want to experiment with different screen fonts, look back at last month's Workbench for details of the necessary programming.

Darren Taylor
Coventry

NEW FROM ROMANTIC ROBOT

MULTIFACE ONE, the MULTIpurpose interFACE, was a sensation when originally released for the ZX Spectrum four years ago. MULTIFACE TWO, for the Amstrad CPC range, followed 2 years later — same pattern, same success. Now the time has come for the MULTIFACE ST — the BIG brother to the MULTIFACE family. Same pattern? Yes, and with even more facilities! So, what can MULTIFACE ST do to make an ATARI ST owner's life so much easier?

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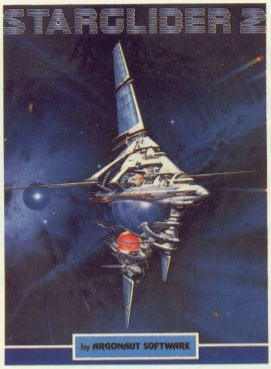

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GOLD DUST

Remember all the stories of '88? Steve Gold kicks off 1989 with the juiciest Stateside rumours from Atarisville and Commodore city – remember where you heard it first.

Commodore outselling Atari?

Basking in the post-Comdex warmth from its new product releases, Commodore is hoping to make a killing in the pre-Christmas run-up in the US. By the time you read this, Commodore will probably have achieved its intention of doubling US sales during the fourth quarter, thanks to some nifty TV advertising on MTV and several other US TV stations.

The seven TV ads were produced for just $75,000 – a fraction of the million dollars-plus that companies usually spend on such advertising campaigns. The costs were kept low by using an Amiga

■ *Amiga – winning the battle in the US*

to produce and edit seven 15 second spot adverts aimed at the teenage market. The ads are also being daisy-chained together to form at least four 30 seconds ads to promote the Amiga as a dual-purpose business and leisure machine.

Bauer said that the viewers of MTV and other teenage-targetted TV stations, where the adverts will be shown more than 1,000 times in the run-up to Christmas, have grown up with computers and video technology. They will, she says, be very interested in the Amiga, once they realise its capabilities.

Of course, there has to be a lure in the campaign. The lure is that every purchase of an A500 qualifies the buyer for a free video recorder worth $349. Considering that's the equivalent of around a third off the full retail price of the A500, the baby Amiga looks like outselling the Atari 520 and 1040ST several times over.

Canada not dry

Early in December saw the World of Commodore Show held in Toronto. Commodore, in case you hadn't noticed, is now 30 years old, and has created a special mobile museum to commemorate the anniversary.

Coupled with the museum, several companies unveiled new Amiga products at the show. Spirit Technology displayed its HDA-506 hard disk adapter for the Amiga A500 and A1000. The hardware add-on for the Amiga allows an ordinary ST-506 hard disk controller to be hooked up to the Amiga. The end result is that cheapie PC hard disks can be hooked up to the Amiga and run quite happily.

Readysoft, meanwhile, previewed its new MAX Apple Mac emulator that plugs into the Amiga's external disk drive socket and allows Mac software to be loaded and run under AmigaDOS. The $150 cartridge should be out in March '89, and does not need the Apple Mac ROM set that Dave Small's Magic Sac and Spectre 128 units require.

Readysoft also previewed Flashback, a plug-in unit that allows up to 100Mb of hard disk data to be dumped to a standard video recorder. Flashback should be out in early February '89 at $99.95.

Also shown in Toronto was a Deluxe Paint version III. The package, which should be out next March, is a major upgrade on version II and includes an animation facility. Deluxe Paint III also supports true overscan and direct overscan painting, Extra-half bright (64 colours), new wrap and tint brush modes, as well as an improved font support with a new requester.

Finally, some good news on the Amiga magazine front as well. *Compute!* Publications announced that it will be launching a new Amiga magazine. The as-yet untitled monthly magazine will be out in the Spring with a $2 price tag. Not such good value as ST/Amiga Format magazine with its disk, of course, but still worth keeping an eye open for if you can get import copies.

Atari prices falling

Now, it may just have been the pre-Christmas market that's causing competition amongst Atari ST third-party companies to cut their prices, but more than few industry watchers suggest that sales of the ST really are tailing off in the US. Whatever the reason, the end result for existing ST users is that they get more oomph for their money.

Practical Solutions has just unveiled a new product for the ST that will make Amiga users jealous. The company's has launched the Tweety board, a plug-in unit that provides a full stereo output from the ST.

How does it do this? Simple. The ST series already has three channels of sound supported from within hardware. To (presumably) cut costs, Atari combined all three signals together to give a mono channel suitable for the ST range of monitors.

The Tweety Board solves the problem with a small circuit board that actually decodes the three channels back into their separate components. Because it uses the ST's standard three sound channels, it's fully compatible with all existing ST software.

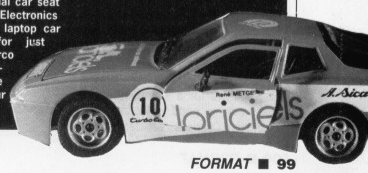
The Tweety board plugs inside the ST and provides three independent phono outlets ready for connection to any suitable external amplifier and/or speakers. The good thing about the system is that the existing ST monophonic output to the monitor is not affected in any way.

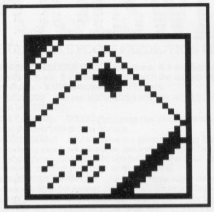
And the price of this amazing beastie? A mere $59.95 plus shipping. Practical also has some technical specification sheets. If any ST/Amiga Format readers want further information, contact Mark Loatman of Practical on 010-1-602-884-9612, or E-mail Mark on Compuserve (76004, 2000) or Genie E-mail (Practicals).

■ *Gold Dust is compiled from the US online services by Steve Gold, a freelance journalist specialising in computer communications. Email, industry tips and comments are welcomed on Telecom Gold 72:MAG066 or via the US E-mail networks: Compuserve 76011, 1155, SGOLD (BIX & CIX), and The Source on IP2009.*

BABY LAPTOPS

Finally this month, and just in time for the launch of the Stacy ST laptop, comes news of one company that has developed a special car seat for laptops. Zirco Electronics is now selling its laptop car seat restraint for just $39.95. Call Zirco on 010-1-303-421-2013 to have one fitted to your Porsche now!





FORMAT LETTERS

New year sentiments from the loyal band of Format correspondents... send your opinions on life, the universe and everything to *Format Letters, ST Amiga Format, 4 Queen Street, Bath BA1 1EJ* and win yourself a luxurious real imitation leather Organiser for 1989.

W/P-ing about

As a recent convert to the Atari having been subverted from my faithful BBC B of some 6 years ilk I would be very grateful for a little advice.

I must admit that I am essentially a user and not an experimenter, and am quite happy to bumble along just pressing the correct keys, with all the technical jargon going over my head at ionospheric level. However...

I have been and continue to use my BBC for word processing, as I am a clerk at several organisations (I am an early retired 63 years of age), and would love to use the Atari 520ST, recently purchased essentially for game play, for this purpose (word processing that is).

I can't find much about word processing in any of the mags, except that most of them appear to be extremely expensive! Is there any word processing program which is of the same caliber as Wordwise Plus or Interword for the BBC, and at a similar price?

R Moyes
Gislingham, Suffolk

■ *The very word processor we use to reply to you is probably a good bet.* Protext *on the ST offers many of the features of* Wordwise Plus, *particularly the word processing language and formatting controls. Read our review of the Amiga version in this issue for more details. If you're more interested in the pull-down menu aspects of programs like* Interword, *you could try* Word Writer ST *or* 1st Word Plus, *which both use the GEM environment. They all cost rather more than the Beeb word processors, though, starting at around £70.*

Gunship down

For the first time in my life, (and I've gone way past my second childhood) I am writing to a magazine. Obviously it's not only to ask for help but to congratulate you all at *ST/Amiga* for a superb magazine, with a good selection of interesting serious articles/software and games software. After reading through the numerous mags, I placed a regular order with my local newsagent for...ST/Amiga...tra la (Fanfare, Applause, Bankruptcy) so you have a lot to answer for.

I must confess I have only recently joined the computer ranks and am a complete novice.

I have a problem, at least I think I have. On attending the Atari exhibition on Sunday 20th at the Alexandra Palace, I purchased a 1Mb disk drive as a second drive for my Atari ST which is alas only fitted with the 0.5Mb drive. I am pleased with the new drive (the Evesham Ltd RF392R) which is working very well...but.

Several months ago a friend asked me to check an Atari 0.5Mb add-on drive. I coupled it up to my 520STFM and it worked OK – I placed the Gunship A disk in Drive A and the B disk in the add-on drive and the game read from both drives. I have tried to repeat this with the new drive but each time it accesses drive B the game flips out and back to the desktop. Is this usual using two different capacity drives? I have tried the other way by double clicking an A disk in Drive B and using your Boot B utility, but it will only run with the B drive switched off and using the built in Drive A and changing disks, could you please help.

V J Sutton
Rugeley, Staffs

■ *It's possible that the Gunship program uses a 1Mb A drive disk and a 0.5Mb second disk, though this seems unlikely. It's more probable that the copy protection happens to be throwing out your A drive disk. If you need the twin drive option, check the alignment of the heads on your internal drive.*

Genlocked in

prize letter

ST Amiga Format is by far and away the best magazine for information about the ST. Allow me therefore to correct an error which crept into your review of *Lights! Camera! action!* in issue 5. In one of the dinky wee margin bits you state that there is no genlock system available for the ST.

Not the case!

Indeed, the reason for this letter being written so far after the event is because I have been using a genlock on my Atari to originate computer graphics for a Scottish and Newcastle training film (*Desmond's Day Out* – please find enclosed a VHS copy).

The genlock was fitted by Capital Computers in Edinburgh. Outwardly it consists of two BNC sockets – a video in (for the TV picture you want to cut in on) and a video out (for the original picture plus overlay). There's also a switch at the back to toggle between 'normal' and 'genlock' modes and a disk of autoboot software to get it all running. Basically the picture 'keys' in to pure white '777', although white can still be achieved with '776', say.

The Cyber series was used to create the original graphics and the whole shebang was put together on a High Band (broadcast quality) edit suite. It must be said that the genlock I was using was *not* broadcast but there is a broadcast model available.

And the cost? A mere £250 for the non-broadcast or about £900 for the full broadcast. Systems have already been installed in Channel 4 and a number of other TV companies. By the way, I don't work for Capital Computers, I'm just very satisfied customer.

Stewart Mcara
Edinburgh

■ *Thanks for your information. Thinking about it, we wonder if most of the Amiga genlocks couldn't be used with the ST. The video signals must be compatible, as you can run an ST into the Amiga's monitor with excellent results.*

Changing sides

A friend recently lent me the original games which he received with the ST Super Pack. Nineteen of the twenty-one games didn't work on my machine. *Quadralien* and *Zynaps* did.

He has a 1Mb drive with his ST and I purchased my 520 STFM from Silica fitted with what I believe to be a 0.5Mb drive. When I boot one of the disks, the *Xenon/Starquake* disk for example, the GEM desktop appears. Then when I double click on either the *Xenon* or *Starquake* program icons it begins to boot the game in the normal way. Then a window opens and it tells me disk A is not responding and to check whether

Qatar solo

For the past few months Steve Gold has talked about the possibility of a plug-in 68020 upgrade for the humble ST. With the advent of the Super ST has this 68020 job been shelved or will it ever see the light of day?

I have just moved to the Middle East and wait with baited breath each month for EI wonder mag to come in the mail. This is not as easy a job as it at first sounds. The train of events follows thus: subscription copy sent to my mother in law in Northampton (stop laughing, someone has got to live in Northampton), eventually she gets round to sending it on to me, at a very high postage cost. After Qatarian postal service have looked through it to see that there are no references to Israel or any pictures which show women in a state of undress it finally makes it to me. Total time, approximately a month. As for Atari dealers here in Qatar, forget it. The big computers down here are MSX (remember them?) and Amstrad CPC 6128's (will you stop laughing). The big computer magazines here are QL ones (obviously so innocuous no one would be offended at anything in them).

So there you have it – computing in the Arabian Gulf. All you readers back home who moan because they don't get their mag dead on time spare a thought for poor us 'down south'. If you don't print the above letter, please answer the above question because your mag is just about the only way I can keep up with what's happening in Atari land.

Dr Peter Millar
Doha, State of Qatar

■ *See the news section this month for details of the 68020 board. This might be what you're looking for, though it's not the board Steve Gold has been writing about.*

It's interesting to hear the state of computer play in Qatar. Perhaps we should work on an export edition, without any ads for Barbarian *or* Vixen

it's a hard disk or to check its connections.

Are the disks with the superpack specified for a 1Mb drive and therefore not able to work on a 0.5 meg drive? Yet if this is true why do *Quadralien* and *Zynaps* work?

If the disks do work only on a 1 Mb would there be any chance of making the other programs work on my 0.5 Mb drive by using a disk copier, (The Deep Scan Nibbler on the Datel pages you print in the magazine for instance?) I would be extremely grateful if you could shed some light on my problem.

Leigh Notley
Windermere

■ *As you suspect, the Super Pack disks are formatted for double-sided drives. The two programs which do run happen, by coincidence, to be stored completely on the top side of the disk, and so can be read by a single-sided drive.*

We can't recommend you to copy the disks as this directly breaches the copyright on the games. If you bought the originals from your friend, you should then be entitled to copy them onto a format your computer can read (although some software licences prevent you legally selling the software in the first place). Even ignoring the legality, you will have trouble copying double-sided disks on a single-sided machine!

Cumana ver to my place

I like Superheroes Inc.

I want to buy a second drive for my Amiga 500. Which one do you recommend?

Ozgur Laglayan
Turkey

■ *So do we.*

We've heard good things about the second drive from Cumana. It costs around £100 and is available from several of the advertisers in Format.

BASIC autoboot

I have owned a Commodore 64 for several years and have managed to obtain a reasonable grasp of Commodore BASIC. Recently I purchased an Amiga 500 and I'm trying to get to grips with AmigaDos. I followed the example in your Workbench section (issue 6) to create a bootable Amiga BASIC disk; having finally got it to work, I wondered if you could tell me how to load a BASIC program from the start-up sequence, so that it runs the moment the disk is booted.

I've tried adding the name of the program to the start-up sequence but I just get an error code 121. I've also tried 'running' it but the same thing happens.

J F Campey
Brentford

■ *You'll need to get the program file AmigaBASIC from the Extras disk into the C directory of your boot disk (ie a COPY of the Workbench master disk). To do this you'll need to erase unused printer drivers or fonts from the WorkBench to make room for BASIC. Then you add the line AMIGABASIC <PROGRAM NAME> to the startup sequence and you should be away.*

Numbering off

I don't own an A500 yet, so I spend time by reading your BASIC programs.

I noticed that in the A500 listings there are no line or program numbers, as with Commodore 128 BASIC. Line numbers seem to be very handy, especially with the GOTO IF..THEN and GOSUB commands. Is it possible to use line numbers in an A500 BASIC program?

Swings and roundabouts

Regarding the contents of *ST Amiga Format* issue 6, I wish to register my complaints of the alarming disparity of the contents of this disk between the ST and the Amiga.

I have an Amiga 500 and none of the gems offered for my enjoyment remotely interest me but the fantastic selection offered for the ST made my mouth water (think I may have gone a little over the top there) *Colossus Chess X*, *Diamonds* and *Accounts* all ready to use, Oh! the lucky ST owners. As I have only owned my 500 for a very short time I'm sure (hopeful) that the gobbledegook written in the read-me files of *Handy Icons*, *AC-windows* and *Perfect Sound* will eventually all become crystal clear but at the moment just about all I understood is 'press space bar to continue'.

I'm certain that I'm not the only beginner who has subscribed to your magazine in the hope of helpful hints and tips etc, but I feel the magazine is now presuming the readers have a far greater knowledge of the intricate workings of the Amiga than can be obtained by reading Commodore's booklets.

Can *Format*:

a) stop presuming every reader has a PhD in computing.
b) give a more equal balance to the contents of the monthly disk.
c) keep up the good work as you have even managed to teach me how to 'press space bar to continue'

Roy Bloomer
Banchory

Why is it *Format* persists with its annoying bias towards the Amiga. Take the issue 6 disk, for instance. The Amiga side contained a Perfect Sound demo, which would have been ideal for my budding interest in computer music and Slideshow, which would be great for my graphics work. All we STers get is a limited chess demo and a mono-only game. It's really not good enough to offer better programs on one side of the disk than the other.

While I'm at it, a lot of the text in *Format* is much too simple for most readers. We don't want interminable explanations of file copying and opening windows. How about an article on accessing the ST's screen memory and poking the video display registers.

Come on *Format*, give the people what they want.

S. Williams
Black Torrington, Devon

■ *You see our problem.*

Is GW BASIC, on the PC the same as Amiga BASIC? Or with line numbers.
W Kaak
Bantry, Ireland

■ *Line numbers can be included in Amiga BASIC listings, but only as named labels. This means you can still GOTO them or GOSUB on them, but it is really much more useful to give discrete sections of your program meaningful names. A subroutine called PrintLabel is a lot easier to understand then one called 3017.*

Protection racket

As an avid fan of 16 bit computers, I was horrified to find that the software for these machines is considerably more expensive than its 8 bit counterpart.

For this reason I am complaining about the so called 'anti-piracy' protection of some of these games. I could personally do better with an 8 bit and already have done!

I recently obtained *Elite* lent to me by a friend who forgot to include a manual, unfortunately making it difficult to run the program, since it asks for a specific word from the manual. This falls in line with a lot of the anti-piracy ideas in quite a few games, Great!... Except for the fact that the Elite manual is not long enough to make the cost of photocopying prohibitive, and secondly, it means that some, if not all, of the manual has to reside in memory, thereby using valuable space that could be otherwise used.

I decided to look into this in more depth. With Antic's disk doctor, to be precise. I'm not going to make it any more easy than it already is by telling all concerned exactly where and how I did it, but suffice to say it took me five minutes to find the information. I copy only to backup existing software and to see if I like a program before I buy it – essential in my view, owing to the cost of it.

My recommendations for serious users, and many thanks to the writers and producers of the following.

STOS... Mandarin Software. Well made, well documented, well priced. It is so easy to use, it hardly needs the massive, comprehensive manual that goes with it

Degas Elite... Batteries included. Great documentation, good ideas within the program, but could have done with an Arc selection rather than having to cut off the unwanted section of a circle.

Antic's Disk Doctor... Good, but not without very minor irritations, (on printing, the x axis numbers are shunted 4 characters to the left) . But otherwise usable.

Last, but by no means least: ST/Amiga Format... Future Publishing Ltd. Keep it going! Great magazine with a realistic attitude towards computers. PLEASE don't turn into a gamers comic like so many mags in the past have done. So far it is the only magazine that I buy regularly, rather than only when an article interests me as with other mags.
D R Saunders
Sittingbourne, Kent.

■ *Thanks for your kind comments on the mag. We're not quite sure what you're trying to say in the first part of your letter, though. It seems to be that copy protection on 16 bit software isn't good enough. This certainly runs against the trend; most people continue to campaign for a slackening of back-up restrictions.*

Doctor, doctor

I have got hold of a PD disk which is full of documents that involve the ST in late '88 and '89. One of the files concerns a ROM virus. I will explain. The ROM virus is a virus that manages to break open the weakest part of the protected RAM and makes a very easy passage to the ROM. Once it's in, it damages every disk and also writes itself to that disk, so that when you boot up, the disk that is infected writes it again to the same place, but if the virus is already there, it multiplies by 2 and writes itself again twice to a different place, thus making it difficult to find. There is an eight-key key press that will get rid of it, but no-one knows it apart from the person who made the virus.

This virus causes permanent damage to your ST and can either be removed by a *very* nifty programmer, or by buying a new ROM which costs £38 plus repair man's labour £28 = £66, just for a repair job because of a stupid virus.
Stephen Towells
Shepton Mallet, Somerset
PS Every time you press the wrong keys it doubles.
PPS The code lies in the last sector of the last track. But is loaded by the boot sector!

■ *Er, should that be late '87 and '88, or do you have methods at your disposal about which we as yet know nothing? You're obviously working with different technology from ours anyway, if you have found a virus which will infect a ROM. You seem to have fallen for some elaborate practical joke.*

While it's true that viruses can infect an ST and pass them selves from disk to disk, they cannot *infect a ROM, as this is a Read Only Memory. It can only be programmed with a specialised machine and not from within the ST. We know of no virus that can permanently damage the hardware of an ST, although it can damage floppy or hard disks, and in the worst case make them unusable.*

St. Format

In a recent acquisition of your excellent quality promulgation, which I often find a wonderful miscegenation of erudition, I overheard a conversation between 2 John Menzies' shop assistants, obviously on loan from D*x*ns.

It went as follows:
Assistant 1: Pass the Saint Amiga Formats.
Assistant 2: Who is Saint Amiga anyway?
Assistant 1: Patron Saint of Computer freaks, probably!
Assistant 2: Don't be silly, they wouldn't have a patron saint.

I am all for a Patron Saint for computer users, but not Saint Amiga. Saint ST520FM sounds much better!
Andrew Kennedy
Dunblane

■ *Ah,well – we've always thought of ourselves as martyrs to the cause!*

GST upgrade

I would be very pleased if you would print this letter as I think that GST software are brill.

I had some trouble with my *1st Word* word processor so I wrote to GST asking them if they could help. They replied with a letter stating that they would up-date my disk at no charge, so I sent GST my disk along with the manual. I received it back in seven days with a perfect running program and compliments of GST. I only wish other software houses would take a leaf out of GST's book. If you do print this letter please print a big thank you to GST Software from me. By the way, thanks for the super magazine. I think it is absolutely fantastic and I won't hesitate in renewing my subscription.
PJ McNeilly
Harlech, Gwynedd

■ *Good to print a bouquet among the brickbats.*

NO ECHO, No Echo, no echo

Firstly I would like to congratulate you on what a mega mag you publish. No other mag gives a disk away every month, and no other is packed with news, reviews, and tips.

After reading your Sample City round up of samplers for the Amiga and ST, I decided it was time to introduce a sampler to my A500. I decided on the Pro Sampler Studio, because it looked very straight-forward and powerful. There was one thing I couldn't understand after comparing the ST and Amiga samplers and that was the fact that the ST samplers had a reverberation/echo mode – why didn't any of the Amiga samplers have that function? We all know the A500 can put the ST's sound to shame, so why not. In a way I did want a sampler for the echo function.

Lastly, I was wondering whether there is a real-time effects module on the market. I would be very grateful for a reply.
Dick Bacon
Shoreham-by-Sea

■ *Aegis Audiomaster, sampling software which is compatible with most Amiga samplers, does have a reverb function. The software itself costs around £35, though you have to add the cost of a sampler to that. Check the ads in this issue for a supplier.*

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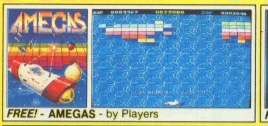

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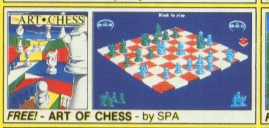

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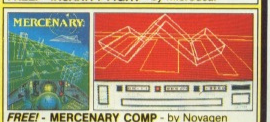

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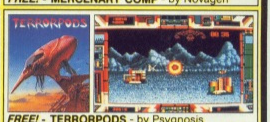

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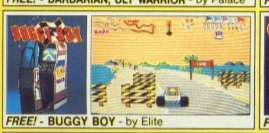

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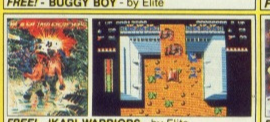

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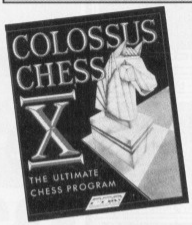
Colossal results

We had a surprisingly large entry for the Colossus Chess competition from our issue 6 cover disk. The challenge was, you will recall, to beat Colossus within the 15 moves the . demo allows you. There are obviously a lot of keen chess players out there. Unfortunately when we came to test out the entries, though, we had a problem in not being able to reproduce many of the games because some of you didn't tell us which playing options you had chosen.

THE WINNING GAME

	White	Black		White	Black
1.	g1-f3	d7-d5	8.	c4-a5+	d6-d5
2.	d2-d4	e7-e6	9.	b1-c3+	d5xd4
3.	e2-e4	d5xe4	10.	c1-e3+	d4-e5
4.	f3-e5	f7-f6	11.	a5-c4+	e5-f5
5.	d1-h5+	e8-e7	12.	f7-h5+	g7-g5
6.	h5-f7+	e7-d6	13.	g2-g4	mate
7.	e5-c4+	d6-c6			



We based our final choice on repeatability using default settings. Although there were some four-move wins using zero or one second think time, we finally went for a 13 move win which worked equally well on any setting up to 5 seconds. White makes a strong manoeuvring attack on black's king, forcing it into a position where a final pawn move clinches the game. The prize therefore goes to Mr L.F.Osborne or Langley Marish, Berkshire. A full copy of Colossus will be on its way to you soon. Thanks to all who entered.

Writing and drawing

Format is looking for good freelance writers who can put their thoughts together intelligently and write in a fluent and informative manner. We particularly need experts in the fields of graphics, animation, music and communications to write feature and review articles on the ever-increasing number of software packages. If you fulfill the first two requirements, the third one is that you should own an ST or Amiga. we're particularly interested in writers for the Amiga.

Fame (lots) and fortune (not quite so much) await you – please get in touch with the editor, sending a sample of writing together with a brief CV showing us your background. (Our address is on the contents page.)

NEXT MONTH

The start of the year – just the time to invest in a subscription to your favourite 16 bit magazine. While waiting for your first subscription copy, keep an eye out on THURSDAY 16th FEBRUARY for issue 9 of ST Amiga Format. We're planning these features for your delectation, many of which will probably see print:

- **DISGUISE YOUR COMPUTER – The secrets of emulation revealed. Run IBM, BBC or Apple Macintosh programs and visit a wider world of software.**
- **MULTIFACE ST – Now you can all stop bleating about copy protection. A full review of the pirate-proof hardware which lets you back up anything.**
- **BATTLE OF THE ORGANISERS – Digita's *Day by Day* and Kempston's *Daatafax* file it out in the four-punch binder program stakes.**
- **MINIGEN – Add sparkle to your holiday video with your Amiga and the cheapest genlock on the market. Lock on, type in, read out.**
- **GAMES ARE GO – *Dragon's Lair*, *War in Middle Earth* and *Sword of Sodan* sock it to your screens.**
- **AMIGA BASICS – Upgrade from AmigaBASIC with HiSoft's new compiler, or take a look at GFA BASIC v3 fresh from its success on the ST.**
- **MODEMS – a survey of those little black boxes which let micros talk on the phone for longer than your seventeen old sister.**

Superheroes, Inc.

by Sarkar

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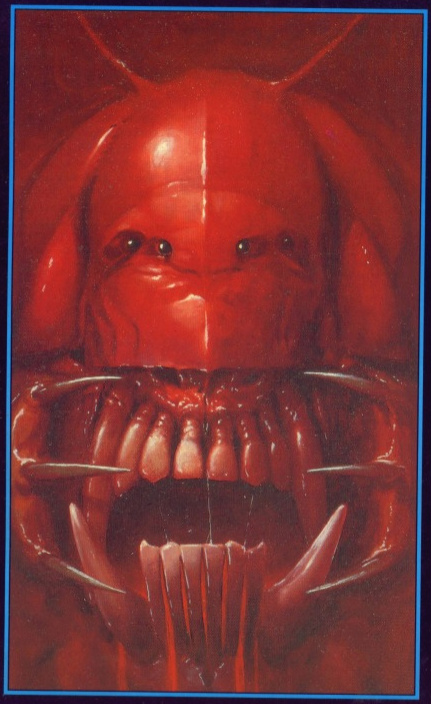

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